

حمل الآن

مجاناً وحصرياً

المراجعة رقم (1)

الترم الاول



Important questions on unit one



First Multiple choice questions

- 1 The irrational number between 2 and 3 is
- (a) $2.\bar{5}$ (b) $\sqrt[3]{10}$ (c) $\sqrt[3]{6.25}$ (d) $\sqrt[3]{9}$
-
- 2 $\sqrt[3]{-27} + 3 = \dots\dots\dots$
- (a) zero (b) 3 (c) 6 (d) -24
-
- 3 The solution set of the equation: $x^3 = 8$ in $\mathbb{Q}$ is
- (a) $\{-2\}$ (b) $\{2\}$ (c) $\{-2, 2\}$ (d) $\emptyset$
-
- 4 If $x < \sqrt{29} < x + 1$, $x \in \mathbb{Z}$, then $x = \dots\dots\dots$
- (a) 4 (b) 5 (c) 6 (d) 7
-
- 5 The number $\sqrt{10}$ lies between two consecutive integers these integers are
- (a) 2 and 3 (b) 3 and 4 (c) 4 and 5 (d) 5 and 6
-
- 6 $\mathbb{Q} \cup \mathbb{Q} = \dots\dots\dots$
- (a) $\emptyset$ (b) $\mathbb{Z}$ (c) $\mathbb{R}$ (d) $\mathbb{N}$
-
- 7 $\sqrt{-9} \dots\dots\dots \mathbb{R}$
- (a) $\in$ (b) $\notin$ (c) $\subset$ (d) $\not\subset$
-
- 8 What is the estimate value of the number $\sqrt{41}$ to the nearest integer ?
- (a) 6 (b) 7 (c) 36 (d) 49
-
- 9 $\sqrt[3]{25} \dots\dots\dots \sqrt{9}$
- (a) $<$ (b) $>$ (c) $=$ (d) $\geq$
-
- 10 $\sqrt{15} \in \dots\dots\dots$
- (a) $\mathbb{N}$ (b) $\mathbb{Z}$ (c) $\mathbb{Q}$ (d) $\mathbb{Q}$

11 $\mathbb{R} = \dots\dots\dots$

- (a) $]0, \infty[$ (b) $] - \infty, \infty[$ (c) $] - \infty, 0[$ (d) $] - \infty, 0]$
-

12 $-3 \dots\dots\dots] - 4, 1]$

- (a) $\in$ (b) $\notin$ (c) $\subset$ (d) $\not\subset$
-

13 $\mathbb{N} \dots\dots\dots]0, \infty[$

- (a) $\in$ (b) $\notin$ (c) $\subset$ (d) $\not\subset$
-

14 $[4, 9] \cap [7, 10] = \dots\dots\dots$

- (a) $[4, 10]$ (b) $[9, 10]$ (c) $[4, 7]$ (d) $[7, 9]$
-

15 If $a \in]2, 5[$, then a could be equal to $\dots\dots\dots$

- (a) 1 (b) 2 (c) 4 (d) 5
-

16 $[-3, 5] \cup]2, 7[= \dots\dots\dots$

- (a) $[2, 5]$ (b) $[-3, 7[$ (c) $[-3, 2[$ (d) $[5, 7[$
-

17 If $X =] - \infty, 3[$, then $\bar{X} = \dots\dots\dots$

- (a) $]3, \infty[$ (b) $[0, 3[$ (c) $[3, \infty[$ (d) $] - \infty, 0[$
-

18 $]0, 5[-]3, 7[= \dots\dots\dots$

- (a) $]0, 3]$ (b) $]5, 7[$ (c) $]3, 5[$ (d) $]0, 3[$
-

19 $] - 1, 1[\cap \{1, 0, -1\} = \dots\dots\dots$

- (a) $\{1\}$ (b) $\{-1, 1\}$ (c) $[-1, 1]$ (d) $\{0\}$
-

20 $[2, 5] - \{2, 5\} = \dots\dots\dots$

- (a) $\{2, 5\}$ (b) $[2, 5[$ (c) $]2, 5[$ (d) $\emptyset$
-

21 $\mathbb{R} \cap [2, 5[= \dots\dots\dots$

- (a) $\mathbb{R}$ (b) $]2, 5]$ (c) $]2, 5[$ (d) $]2, 5[$
-

22 $\frac{6}{\sqrt{3}} = \dots\dots\dots$

(a) $\frac{2}{\sqrt{3}}$

(b) $2\sqrt{3}$

(c) $\frac{2\sqrt{3}}{3}$

(d) $\frac{\sqrt{3}}{2}$

23 $3\sqrt{5} - 4\sqrt{5} = \dots\dots\dots$

(a) $-\sqrt{5}$

(b) $-7\sqrt{5}$

(c) $\sqrt{5}$

(d) $7\sqrt{5}$

24 $-5\sqrt{2} \times 3\sqrt{2} = \dots\dots\dots$

(a) -15

(b) 15

(c) 30

(d) -30

25 If $x = -4\sqrt{3}$, $y = \sqrt[3]{3}$, then $xy^3 = \dots\dots\dots$

(a) -12

(b) $-12\sqrt{3}$

(c) 12

(d) $12\sqrt{3}$

26 $2(3 + \sqrt{2}) = \dots\dots\dots$

(a) $6 + \sqrt{2}$

(b) 8

(c) $6 + 2\sqrt{2}$

(d) $2 + \sqrt{6}$

27 $(2\sqrt{5} - 5)^2 = \dots\dots\dots$

(a) $20 - 45\sqrt{5}$

(b) $45 + 20\sqrt{5}$

(c) $20 + 45\sqrt{5}$

(d) $45 - 20\sqrt{5}$

28 $(2\sqrt{2} + 1)(2\sqrt{2} - 1) = \dots\dots\dots$

(a) $8 + 2\sqrt{2}$

(b) 7

(c) $7 + \sqrt{2}$

(d) 8

29 The additive inverse of the number : $3\sqrt{7} - 4$ is $\dots\dots\dots$

(a) $-3\sqrt{7} - 4$

(b) $4 - 3\sqrt{7}$

(c) $3\sqrt{7} + 4$

(d) $-4 + 3\sqrt{7}$

30 $\frac{3}{\sqrt{5} + \sqrt{2}} = \dots\dots\dots$

(a) $\sqrt{5} - \sqrt{2}$

(b) $3\sqrt{5} + 3\sqrt{2}$

(c) $\frac{1}{3}(\sqrt{5} - \sqrt{2})$

(d) $\sqrt{2} - \sqrt{5}$

31 The multiplicative inverse of the number : $-4\sqrt{2}$ is $\dots\dots\dots$

(a) $4\sqrt{2}$

(b) $\frac{\sqrt{2}}{8}$

(c) $-\frac{\sqrt{2}}{8}$

(d) $\frac{8}{\sqrt{2}}$

32 What is the multiplicative inverse of the number $\sqrt{3} - 2$?

(a) $2 - \sqrt{3}$

(b) $\sqrt{3} + 2$

(c) $-\sqrt{3} - 2$

(d) $\sqrt{3} - 2$

33 The simplest form of the number $\sqrt{48}$ is

(a) $3\sqrt{3}$

(b) $4\sqrt{3}$

(c) $2\sqrt{6}$

(d) $6\sqrt{2}$

34 $4\sqrt{\frac{1}{2}} = \dots\dots\dots$

(a) $2\sqrt{2}$

(b) $\frac{1}{2}\sqrt{2}$

(c) 2

(d) $\sqrt{2}$

35 $3\sqrt[3]{24} = \dots\dots\dots$

(a) $6\sqrt{6}$

(b) $6\sqrt[3]{4}$

(c) $6\sqrt[3]{3}$

(d) $6\sqrt[3]{3}$

36 $\sqrt{2} \times \sqrt{8} = \dots\dots\dots$

(a) $4\sqrt{2}$

(b) 4

(c) $\sqrt{10}$

(d) $4\sqrt{3}$

37 $2\sqrt{3} + 5\sqrt{27} = \dots\dots\dots$

(a) $7\sqrt{30}$

(b) $7\sqrt{3}$

(c) $10\sqrt{3}$

(d) $17\sqrt{3}$

38 $5\sqrt[3]{\frac{1}{5}} = \dots\dots\dots$

(a) $\sqrt[3]{5}$

(b) 5

(c) $\sqrt[3]{25}$

(d) $\sqrt{5}$

39 If $\frac{\sqrt{3}}{\sqrt{a}} = \frac{\sqrt{2}}{\sqrt{6}}$, then a =

(a) $\sqrt{3}$

(b) $\sqrt{6}$

(c) 3

(d) 9

40 $\frac{\sqrt{72}}{\sqrt{2}} = \dots\dots\dots$

(a) $2\sqrt{6}$

(b) $6\sqrt{2}$

(c) 6

(d) $\sqrt{70}$

41 The next number in the pattern : $\sqrt{3}, \sqrt{12}, \sqrt{27}, \sqrt{48}, \dots$ is

(a) $\sqrt{72}$

(b) $\sqrt{75}$

(c) $\sqrt{54}$

(d) $\sqrt{64}$

42 The multiplicative inverse of the number $\sqrt{32}$ is

(a) $\frac{8}{\sqrt{2}}$

(b) $\frac{\sqrt{2}}{8}$

(c) $4\sqrt{2}$

(d) $\frac{\sqrt{2}}{4}$

43 Half of the number 2^{10} is

(a) 2^5

(b) 2^{10}

(c) 2^9

(d) 2^{11}

- 44 $\left(\frac{3}{5}\right)^{-1} = \dots\dots\dots$
 (a) $\frac{3}{5}$ (b) $\frac{5}{3}$ (c) $-\frac{5}{3}$ (d) $-\frac{3}{5}$
-
- 45 $(-\sqrt{3})^4 = \dots\dots\dots$
 (a) 3 (b) -3 (c) 9 (d) -9
-
- 46 $-(\sqrt{2})^5 = \dots\dots\dots$
 (a) $(\sqrt{2})^5$ (b) $-2\sqrt{2}$ (c) $4\sqrt{2}$ (d) $-4\sqrt{2}$
-
- 47 $\left(\frac{6}{\sqrt{3}}\right)^2 = \dots\dots\dots$
 (a) $6\sqrt{3}$ (b) 12 (c) $12\sqrt{2}$ (d) $6\sqrt{2}$
-
- 48 $2^8 + 2^8 + 2^8 + 2^8 = \dots\dots\dots$
 (a) 2^{24} (b) 2^{10} (c) 4^8 (d) 8^{24}
-
- 49 If $3^x = 5$, then $3^{x+2} = \dots\dots\dots$
 (a) 15 (b) 25 (c) 45 (d) 81
-
- 50 If $3^{x+3} = 1$, then $x = \dots\dots\dots$
 (a) -3 (b) 3 (c) 0 (d) 1
-
- 51 What is the perimeter of the square whose area is $a \text{ cm}^2$?
 (a) $a^4 \text{ cm}$ (b) $(\sqrt{a})^4 \text{ cm}$ (c) $4\sqrt{a} \text{ cm}$ (d) $a^4 \text{ cm}$
-
- 52 $(\sqrt{3})^3 \times (\sqrt{3})^{-4} = \dots\dots\dots$
 (a) $\sqrt{3}$ (b) $\frac{\sqrt{3}}{3}$ (c) 3 (d) $\frac{1}{3}$
-
- 53 If $(\sqrt{6})^x \times \sqrt{6} = 1$, what is the value of x ?
 (a) 0 (b) 1 (c) -1 (d) -2
-
- 54 If $(x-3)^0 = 1$, then $x \in \dots\dots\dots$
 (a) $\mathbb{R} - \{3\}$ (b) $\mathbb{R}$ (c) $\{3\}$ (d) $\mathbb{R} - \{-3\}$

Second Essay questions

- 1** Find two consecutive integers between which each of the following numbers lies and identify its approximate location on the number line :

① $\sqrt{11}$

② $\sqrt[3]{20}$

- 2** Arrange the numbers : $6.\overline{36}$, $6\frac{4}{5}$, 7 , $\sqrt{40}$ from the smallest to the largest.

- 3** Find in $\mathbb{R}$ the solution set of each of the following equations :

① $x^3 - 11 = 5$

② $3x^2 - 1 = -13$

③ $4x^3 - 1 = 3$

- 4** Find in $\mathbb{Q}$ the solution set of each of the following equations :

① $5x^3 - 6 = 4$

② $2x^2 - 3 = 9$

③ $(x-1)^2 = 4$

- 5** A square with a side length of 8 cm, find the length of its diagonal.

- 6** Write in interval notation and represent on the number line each of the following :

① $\{x : x \in \mathbb{R}, x \geq 2\}$

② $\{x : x \in \mathbb{R}, -1 \leq x < 3\}$

③ $\{x : x \in \mathbb{R}, x < 1\}$

④ The set of positive real numbers.

- 7** If $X = [-3, 2[$, $Y =]-1, 5]$, find using the number line :

① $X \cap Y$

② $X \cup Y$

③ $X - Y$

- 8** If $A =]-5, \infty[$, $B =]-\infty, 2]$, find using the number line :

$A \cup B$, $A \cap B$, $A - B$, $B - A$, $\hat{A}$, $\hat{B}$

- 9** Find in the simplest form each of the following :

① $2\sqrt{5} + 3\sqrt[3]{2} + 4\sqrt{5} + \sqrt[3]{2}$

② $\sqrt{7} \left(\frac{2}{\sqrt{7}} - \sqrt{7} + 3 \right)$

③ $(\sqrt{5} - 1)(2\sqrt{5} + 3)$

④ $(2\sqrt{5} - 3)^2$

- 10** If $x = -4\sqrt{3}$, $y = \sqrt{3}$, $z = \sqrt[3]{5}$, find the value of each of :

① $x + y$

② xy

③ $2x - yz^3$

- 11** If $x = \frac{1}{\sqrt{3}+2}$, $y = \sqrt{3} + 2$, find in the simplest form the value of : $(x + y)^2$

12 A square with a side length of $5\sqrt{2}$ cm , find its area.

13 The dimensions of a rectangle are $(3\sqrt{3} + 4)$ cm and $(3\sqrt{3} - 4)$ cm , find its perimeter and area.

14 Simplify each of the following to the simplest form :

$$\begin{array}{l|l} \textcircled{1} \sqrt{75} - 2\sqrt{27} + 3\sqrt{\frac{1}{3}} & \textcircled{2} \sqrt[3]{81} + \sqrt[3]{24} - 3\sqrt[3]{\frac{1}{9}} \\ \textcircled{3} \sqrt{12} + \sqrt[3]{54} - 2\sqrt{3} - \sqrt[3]{16} & \textcircled{4} \sqrt[3]{24} + \sqrt[3]{15} \times \sqrt[3]{25} \\ \textcircled{5} \frac{\sqrt{72} \times \sqrt{75}}{3\sqrt{6}} & \end{array}$$

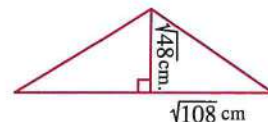
15 If $x = \sqrt{7} + \sqrt{5}$, $y = \sqrt{7} - \sqrt{5}$, find in the simplest form :

$$\textcircled{1} x^2 - y^2 \qquad \textcircled{2} \frac{x+y}{xy-1}$$

16 If $x = \sqrt{6} + \sqrt{2}$, $y = \frac{4}{x}$, find in the simplest form : $(x+y)^2$

17 If $a = \sqrt[3]{5} + \sqrt[3]{3}$, $b = \sqrt[3]{5} - \sqrt[3]{3}$, find the value of : $\left(\frac{a+b}{a-b}\right)^3$

18 Find the area of the given figure :



19 Simplify to the simplest form each of the following :

$$\textcircled{1} \frac{(\sqrt{3})^3 \times (\sqrt{3})^4}{(\sqrt{3})^5} \qquad \textcircled{2} \frac{(\sqrt{5})^{-3} \times (\sqrt{2})^{-4}}{(\sqrt{5})^{-1} \times (\sqrt{2})^{-5}} \qquad \textcircled{3} \frac{16x^4y^{-2} \times 7x^4y^5}{28x^2y^{-3}}$$

20 If $x = \frac{\sqrt{3}}{2}$, $y = \frac{1}{\sqrt{3}}$, $z = \frac{\sqrt{2}}{2}$, find the value of : $x^2 + (xz)^2 \times y^2$

21 If $3^x = 4$, find the value of each of :

$$\textcircled{1} 3^{x+1} \qquad \textcircled{2} 3^{x-1} \qquad \textcircled{3} 3^{x+2} + 3^{x+3}$$

Important questions on unit two



First Multiple choice questions

- 1 The greatest common factor in the polynomial $14x^3y - 7xy^2 - 63xy$ is
(a) $7x$ (b) $7y$ (c) $7xy$ (d) $7x^2y^2$
-
- 2 If $5xy + 5ab = 30$, then $xy + ab =$
(a) 5 (b) 6 (c) 10 (d) 15
-
- 3 $27a^3 + 18 =$ $(3a^3 + 2)$
(a) $9a$ (b) 18 (c) $3a$ (d) 9
-
- 4 If $2xy^2 + 2x^2y + 2xyz = 24$, $(y + x + z) = 6$, then $xy =$
(a) 2 (b) 4 (c) 3 (d) 8
-
- 5 $-15a^2b^2 + 9ab^3 =$
(a) $3(a^2b^2 + ab^3)$ (b) $-3ab^2(5a - 3b)$
(c) $3a^2b(5a - 3b)$ (d) $5ab(3a - 9b)$
-
- 6 $3a(2x + y) - 5b(2x + y) =$
(a) $(2x + y)(3a - 5b)$ (b) $(2x - y)(3a + b)$
(c) $(2x - y)(3a + 5b)$ (d) $(3a + b)(2x + 5y)$
-
- 7 If $(3a + b) = 5$, $(2m - n) = 8$, then $6ma + 2mb - 3na - nb =$
(a) 40 (b) 20 (c) 13 (d) 80
-
- 8 The solution set of the equation : $7x^2 + x = 0$ in $\mathbb{R}$ is
(a) $\{0, 7\}$ (b) $\{0, \frac{1}{7}\}$ (c) $\{-\frac{1}{7}, 0\}$ (d) $\emptyset$
-
- 9 If $(x - 1)$ is one of the factors of the trinomial $x^2 - 4x + 3$, then the other factor is
(a) $x + 3$ (b) $x + 4$ (c) $x + 1$ (d) $x - 3$
-
- 10 If $(x + 3y)$ is one of the factors of the trinomial $x^2 + xy - 6y^2$, then the other factor is
(a) $x - 2y$ (b) $x - 3y$ (c) $x + 2y$ (d) $x + 6y$

- 11 If $x^2 - ax + 12$ is factorizable, then a can be equal to
- (a) -1 (b) 4 (c) 7 (d) 1
-
- 12 If $x^2 + 7x + b$ is factorizable, then b can be equal to
- (a) 3 (b) 4 (c) 18 (d) -18
-
- 13 $x^2 + 5x + 4 = \dots\dots\dots$
- (a) $(x+4)(x+1)$ (b) $(x+5)(x-1)$
 (c) $(x+3)(x+2)$ (d) $(x-1)(x-4)$
-
- 14 The solution set of the equation : $x^2 - 6x - 16 = 0$ in $\mathbb{R}$ is
- (a) $\{2, 6\}$ (b) $\{2, 8\}$ (c) $\{-2, 8\}$ (d) $\{2, -8\}$
-
- 15 The number that can be added to the expression : $x^2 + 8x + 5$ to be factorizable is
- (a) 1 (b) 2 (c) 4 (d) 5
-
- 16 $x^2 + 3x - 18 = \dots\dots\dots$
- (a) $(x-6)(x+3)$ (b) $(x-3)(x-6)$
 (c) $(x-3)(x+6)$ (d) $(x+3)(x+6)$
-
- 17 If $x^2 + 8x + 12 = (x+a)(x+2)$, then $a = \dots\dots\dots$
- (a) 10 (b) 8 (c) 6 (d) 4
-
- 18 If $x + 3y = 5$, $2x - y = 3$, then $2x^2 + 5xy - 3y^2 = \dots\dots\dots$
- (a) 8 (b) 15 (c) -8 (d) -15
-
- 19 $3x^2 + 20x + 17 = \dots\dots\dots$
- (a) $(x+3)(x+17)$ (b) $(3x+17)(x+1)$
 (c) $(3x-1)(x-17)$ (d) $(3x-17)(x-1)$
-
- 20 If $(x-5)$ is one of the factors of the trinomial $7x^2 - 34x - 5$, then the other factor is
- (a) $7x-1$ (b) $7x+1$ (c) $x+7$ (d) $x-7$
-
- 21 If $6a^2 + ka + 10 = (2a-5)(3a-2)$, then $k = \dots\dots\dots$
- (a) 15 (b) 19 (c) -19 (d) 4

- 22** The solution set of the equation : $2x^2 - 9x + 9 = 0$ in $\mathbb{R}$ is
- (a) $\{3\}$ (b) $\{2, 3\}$ (c) $\{\frac{3}{2}, 3\}$ (d) $\{-\frac{3}{2}, -3\}$
-
- 23** If $5a^2 - 12ab + 7b^2 = 75$, $5a - 7b = -25$, then $a - b =$
- (a) -3 (b) 3 (c) -5 (d) 5
-
- 24** Which of the following polynomials represents a perfect square ?
- (a) $x^2 + 7x + 4$ (b) $x^2 - 9x + 9$
(c) $x^2 + 24x + 144$ (d) $x^2 - 10x - 25$
-
- 25** If the trinomial $ax^2 + 8x + 1$ represents a perfect square , then $a =$
- (a) 4 (b) 8 (c) 12 (d) 16
-
- 26** If $x^2 + kx + 25$ represents a perfect square , then $k =$
- (a) ± 5 (b) ± 25 (c) ± 10 (d) ± 50
-
- 27** The value of k that makes : $4x^2 - 28x + k$ a perfect square is
- (a) 14 (b) 49 (c) ± 49 (d) 7
-
- 28** A square with an area of $(9x^2 + 48x + 64) \text{ cm}^2$ has a side length of cm
- (a) $x + 8$ (b) $3x + 4$ (c) $3x + 8$ (d) $x + 24$
-
- 29** $\frac{1}{4}x^2 + 3x + 9 =$
- (a) $(\frac{1}{2}x + 3)^2$ (b) $(2x + 3)^2$ (c) $(x + 9)^2$ (d) $(\frac{1}{2}x - 3)^2$
-
- 30** The missing term in the trinomial : $9y^2 + \dots + 16$ to be a perfect square is
- (a) $12y$ (b) $24y$ (c) $48y$ (d) $24y^2$
-
- 31** If $x^2 + 2xy + y^2 = 25$, then $(x + y) =$
- (a) 10 (b) ± 10 (c) 5 (d) ± 5
-
- 32** The solution set of the equation : $x^2 - 12x + 36 = 0$ in $\mathbb{R}$ is
- (a) $\{6\}$ (b) $\{-6\}$ (c) $\{6, -6\}$ (d) $\{4, 9\}$
-
- 33** $(73)^2 + 2 \times 27 \times 73 + (27)^2 =$
- (a) 100 (b) $1,000$ (c) $10,000$ (d) $100,000$

34 $25x^2 - 90xy + 81y^2 = \dots\dots\dots$

(a) $(5x + 9y)^2$

(b) $(5x - 9y)^2$

(c) $(9x + 5y)^2$

(d) $(9x - 5y)^2$

35 $x^2 - 9 = \dots\dots\dots$

(a) $(x - 3)^2$

(b) $(x + 3)^2$

(c) $(x + 3)(x - 3)$

(d) $(x - 1)(x + 9)$

36 $3x^2 - 3 = \dots\dots\dots$

(a) $(x - 3)^2$

(b) $(x - 3)(x + 3)$

(c) $3(x - 1)(x + 1)$

(d) $3(x - 1)^2$

37 $x^2(a + 2b) - y^2(a + 2b) = \dots\dots\dots$

(a) $(a + 2b)(x + y)(x - y)$

(b) $(x^2 + y^2)(a - 2b)$

(c) $(a + 2b)(x + y)^2$

(d) $(a - 2b)(x + y)(x - y)$

38 If $x^2 - 4y^2 = 21$, $x - 2y = 3$, then $x + 2y = \dots\dots\dots$

(a) 18

(b) 63

(c) 7

(d) 9

39 $x^3 - x = \dots\dots\dots$

(a) $(x^2 - x)^2$

(b) $x(x - 1)^2$

(c) $(x^2 - 1)(x - 1)$

(d) $x(x + 1)(x - 1)$

40 $49a^2b^4 - 4 = \dots\dots\dots$

(a) $(7ab^2 - 2)(7ab^2 + 2)$

(b) $(7ab^2 - 2)^2$

(c) $(7a^2b + 2)(7a^2b - 2)$

(d) $(7a^2b^2 + 2)^2$

41 The solution set of the equation : $x^2 - 25 = 0$ in $\mathbb{R}$ is $\dots\dots\dots$

(a) $\{-5, 5\}$

(b) $\{5\}$

(c) $\{-5\}$

(d) $\emptyset$

42 The solution set of the equation : $x^2 + 81 = 0$ in $\mathbb{R}$ is $\dots\dots\dots$

(a) $\{9\}$

(b) $\{-9\}$

(c) $\{-9, 9\}$

(d) $\emptyset$

43 The solution set of the equation : $x^2 + 9 = 25$ in $\mathbb{R}$ is $\dots\dots\dots$

(a) $\{-5, 5\}$

(b) $\{-3, 3\}$

(c) $\{-4, 4\}$

(d) $\emptyset$

44 The solution set of the equation : $x^3 = 36x$ in $\mathbb{R}$ is

- (a) $\{-6, 6\}$ (b) $\{0, -6, 6\}$ (c) $\{6\}$ (d) $\{0, 6\}$
-

45 $(75)^2 - (25)^2 = 100 \times$

- (a) 100 (b) 50 (c) 25 (d) 75
-

46 $x^3 + 1 = (x + 1)(\dots\dots\dots)$

- (a) $x^2 - 1$ (b) $x^2 + 1$ (c) $x^2 - x + 1$ (d) $x^2 + x + 1$
-

47 $(x - 2)(x^2 + 2x + 4) =$

- (a) $x^3 - 8$ (b) $x^2 - 8$ (c) $(x - 2)^2$ (d) $(x + 2)^2$
-

48 If $a^3 - b^3 = 64$, $a^2 + ab + b^2 = 16$, then $a - b =$

- (a) 8 (b) -4 (c) 4 (d) -8
-

49 If $x^3 + y^3 = 28$, $x + y = 2$, then $x^2 - xy + y^2 =$

- (a) 48 (b) 14 (c) 2 (d) 7
-

50 If $x^3 - k = (x - 5)(x^2 + 5x + 25)$, then $k =$

- (a) 125 (b) 25 (c) 5 (d) 15
-

51 If $x^3 + a = (x + 3)(x^2 - 3x + 9)$, then $\sqrt[3]{a} =$

- (a) 27 (b) 4 (c) 3 (d) 81
-

52 If $(2a + 3)$ is one of the factors of the polynomial $8a^3 + 27$, then the other factor is

- (a) $4a^2 + 9$ (b) $4a^2 - 6a + 9$ (c) $4a^2 + 6a - 9$ (d) $(2a - 3)^2$
-

53 $2ax + bx + 2ay + by =$

- (a) $(a + b)(x + y)$ (b) $(2a + b)(x + y)$ (c) $(2a - b)(x - y)$ (d) $(a - b)(x - y)$
-

54 $mn + 5n + 7m + 35 =$

- (a) $(m + 5)(n + 7)$ (b) $(m + 7)(n + 5)$
(c) $(5m + 7)(7n + 5)$ (d) $(m - 5)(n - 7)$
-

55 $y^3 + y^2 + y + 1 =$

- (a) $(y^2 + y)^2$ (b) $(y^2 + 1)^2$ (c) $(y + 1)(y^2 + 1)$ (d) $(y + 1)^3$
-

56 If $b^2 + bc + cd + db = 15$, $b + c = 3$, then $b + d = \dots\dots\dots$

- (a) 12 (b) 45 (c) 10 (d) 5

57 $a^2 + 4ab + 4b^2 - 49 = \dots\dots\dots$

- (a) $(a + 2b - 7)(a + 2b + 7)$ (b) $(a + 2b + 7)^2$
(c) $(a - 2b - 7)^2$ (d) $(a - 2b - 7)(a + 2b + 7)$

58 When completing the square for the expression : $(x^2 + 16)$, we add $\dots\dots\dots$

- (a) $\pm 4x$ (b) $\pm 8x$ (c) $\pm 4x^2$ (d) $\pm 8x^2$

59 $a^4 + 4b^4 = \dots\dots\dots$

- (a) $(a^2 + 2b^2 - 2ab)(a^2 + 2b^2 + 2ab)$ (b) $(a^2 + 2b)^2$
(c) $(a^2 - 2b^2)(a^2 + 2b^2)$ (d) $(a^2 + 2a^2b^2)^2$

60 If $(9m^2 + 2n^2 - 6mn)$ is one of the factors of the polynomial : $81m^4 + 4n^4$, then the other factor is $\dots\dots\dots$

- (a) $9m^2 + 2n^2 - 6mn$ (b) $9m^2 + 2n^2 + 6mn$
(c) $9m + 2n - 6mn$ (d) $9m + 2n + 6mn$

Second Essay questions

1 Factorize each of the following completely :

- | | |
|---------------------------------|------------------------------|
| ① $27x^3 + 9x$ | ② $8x^2 - 24$ |
| ③ $7a^3b^4 - 21ab^3 + 28a^2b^2$ | ④ $-4x^3 + 12x + 16x^2$ |
| ⑤ $6a^4 - 5a^2$ | ⑥ $3x(2a - 5) + y(2a - 5)$ |
| ⑦ $5a(2a - 3b) + 4b(2a - 3b)$ | ⑧ $(x + 5)^2 - y(x + 5)$ |
| ⑨ $3(a - 4) + (a - 4)^2$ | ⑩ $(x + 2)^3 - 2(x + 2)^2$ |
| ⑪ $x^2 + 8x + 15$ | ⑫ $x^2 - 7x + 12$ |
| ⑬ $x^2 + 13x - 30$ | ⑭ $x^2 - 3x - 18$ |
| ⑮ $3x^2 + 7x + 2$ | ⑯ $2x^2 + x - 6$ |
| ⑰ $2x^2 - 5x + 3$ | ⑱ $2x^2 - 5x - 12$ |
| ⑲ $25x^2 - 30x + 9$ | ⑳ $3x^2 + 24x + 48$ |
| ㉑ $49x^2 + 70xy + 25y^2$ | ㉒ $20x^4 + 60x^2y^2 + 45y^4$ |

$$\textcircled{23} 9x^2 - 16$$

$$\textcircled{25} 8x^3 + 125$$

$$\textcircled{27} a^3 + 0.008$$

$$\textcircled{29} bx + by + cx + cy$$

$$\textcircled{31} a^2 + 2ab + b^2 - c^2$$

$$\textcircled{33} 81x^4 + 4y^4$$

$$\textcircled{35} 1 - 4x^2$$

$$\textcircled{37} x^4 - 13x^2 + 36$$

$$\textcircled{24} 3x^2 - 75$$

$$\textcircled{26} 3x^3 - 81$$

$$\textcircled{28} ax + bx + 5a + 5b$$

$$\textcircled{30} xy + 5x + 7y + 35$$

$$\textcircled{32} x^4 + 4y^4$$

$$\textcircled{34} x^4 + 8x^2 + 16$$

$$\textcircled{36} 6x^2 + y(2y - 7x)$$

$$\textcircled{38} (x^2 + 4)(x + 1) - 5(x + 1)$$

2 Find the solution set of each of the following equations in $\mathbb{R}$:

$$\textcircled{1} 3x^2 + 6 = 0$$

$$\textcircled{3} x^4 + x^2 = 0$$

$$\textcircled{5} (2x + 3)^2 + 2x - 3 = 0$$

$$\textcircled{7} x^2 - 7x - 18 = 0$$

$$\textcircled{9} x^2 - x = 12$$

$$\textcircled{11} (x + 7)(x + 3) = -3$$

$$\textcircled{13} 3x^2 - 2x - 8 = 0$$

$$\textcircled{15} -2x^2 + 13x - 15 = 0$$

$$\textcircled{17} a^2 + 6a + 9 = 0$$

$$\textcircled{19} 16b^2 + 9 = 24b$$

$$\textcircled{21} x^2(x + 1)^2 - (x + 1)^2 = 0$$

$$\textcircled{23} 9x^2 - 1 = 0$$

$$\textcircled{25} x^2 - 2x - 4 = 0$$

$$\textcircled{2} 2x^2 + x = 0$$

$$\textcircled{4} x(x - 2) + 5(x - 2) = 0$$

$$\textcircled{6} x^2 + x - 6 = 0$$

$$\textcircled{8} x^2 - 8x + 15 = 0$$

$$\textcircled{10} x(x + 9) = 10$$

$$\textcircled{12} 5x - x^2 = -24$$

$$\textcircled{14} 7x^2 + 5 = 12x$$

$$\textcircled{16} x^3 + 6x^2 + 5x = 0$$

$$\textcircled{18} 4m^2 - 4m + 1 = 0$$

$$\textcircled{20} 25x^2 - 4(5x - 1) = 0$$

$$\textcircled{22} x^2 - 4 = 0$$

$$\textcircled{24} x^2 + 12x + 7 = 0$$

3 Use factorizing to facilitate finding the result of each of the following :

$$\textcircled{1} 15 \times 12 - 15 \times 10$$

$$\textcircled{3} (64)^2 + 2 \times 64 \times 36 + (36)^2$$

$$\textcircled{5} (48)^2 - (42)^2$$

$$\textcircled{2} 7 \times 27 + 7 \times 18 - 7 \times 25$$

$$\textcircled{4} (99)^2 + 2 \times 99 + 1$$

4 The area of a rectangle is $(x^2 + 9x - 22) \text{ cm}^2$, find possible dimensions for this rectangle in terms of x

Important questions on unit three



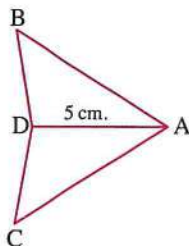
First Multiple choice questions

- 1 If $\overline{AB} \cong \overline{XY}$, then $AB - XY = \dots\dots\dots$
 (a) 2 AB (b) 2 XY (c) 4 AB (d) 0
- 2 If $\angle X \cong \angle Y$, $\angle X$ complements $\angle Y$, then $m(\angle X) = \dots\dots\dots$
 (a) 45° (b) 90° (c) 60° (d) 180°
- 3 If ABCD is a square, then $\overline{AC} \cong \dots\dots\dots$
 (a) $\overline{AB}$ (b) $\overline{BD}$ (c) $\overline{BC}$ (d) $\overline{AD}$
- 4 If $\overline{ML} \cong \overline{SR}$, then $\frac{ML}{SR} = \dots\dots\dots$
 (a) ML (b) SR (c) 1 (d) 0
- 5 If $\overline{AB} \cong \overline{CD}$, $AB = 5 \text{ cm}$, then $2 AB + 2 CD = \dots\dots\dots$
 (a) 20 (b) 10 (c) 5 (d) 0
- 6 If $\triangle ABC \cong \triangle XYZ$, $m(\angle A) + m(\angle B) = 110^\circ$, then $m(\angle Z) = \dots\dots\dots$
 (a) 55° (b) 110° (c) 70° (d) 125°
- 7 If the polygon ABCDE $\cong$ the polygon LMNOP, then $\overline{NO} \cong \dots\dots\dots$
 (a) $\overline{AB}$ (b) $\overline{BC}$ (c) $\overline{CD}$ (d) $\overline{DE}$

8 In the given figure :

If $\triangle ABD \cong \triangle ACD$, $AD = 5 \text{ cm}$,
 the perimeter of the shape ABDC = 30 cm,
 then the perimeter $\triangle ABD = \dots\dots\dots \text{ cm}$.

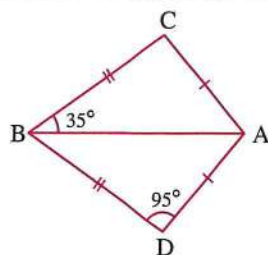
- (a) 35 (b) 20
 (c) 30 (d) 15



9 In the given figure :

$m(\angle CAD) = \dots\dots\dots$

- (a) 50° (b) 95°
 (c) 130° (d) 100°



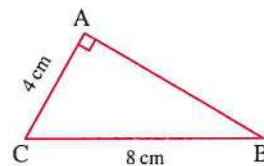
10 If $\triangle ABC$ is right-angled at B , $AB = 7$ cm , $BC = 24$ cm , then $AC = \dots\dots\dots$ cm

- (a) 14 (b) 17 (c) 20 (d) 25
-

11 In the given figure :

$AB = \dots\dots\dots$ cm

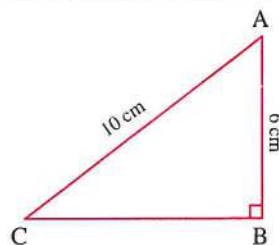
- (a) $4\sqrt{3}$ (b) 4
(c) 12 (d) $12\sqrt{3}$
-



12 In the given figure :

The area of $\triangle ABC = \dots\dots\dots$ cm^2

- (a) 60 (b) 30
(c) 48 (d) 24
-



13 In $\triangle ABC$, if $(AB)^2 = (AC)^2 + (BC)^2$, then $m(\angle C) = \dots\dots\dots$

- (a) 90° (b) 45° (c) 100° (d) 180°
-

14 In $\triangle XYZ$, if $(XY)^2 = (YZ)^2 - (XZ)^2$, then $\angle X$ is $\dots\dots\dots$

- (a) acute. (b) right. (c) obtuse. (d) reflex.
-

15 In $\triangle ABC$, if $AB = 15$ cm , $BC = 8$ cm , $AC = 17$ cm , then $\angle B$ is $\dots\dots\dots$

- (a) acute. (b) right. (c) obtuse. (d) reflex.
-

16 Which of the following numbers represent the lengths of the sides of a right-angled triangle ?

- (a) 20 cm , 15 cm , 24 cm (b) 26 cm , 24 cm , 10 cm
(c) 17 cm , 12 cm , 9 cm (d) 18 cm , 20 cm , 16 cm
-

17 The type of triangle whose side lengths are 8 cm , 10 cm , 7 cm is a/an $\dots\dots\dots$ triangle.

- (a) acute-angled (b) right-angled (c) obtuse-angled (d) isosceles
-

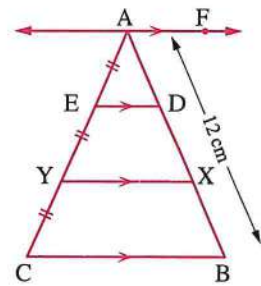
18 If $\triangle ABC$ is an obtuse-angled triangle at B , $AB = 14$ cm , $BC = 10$ cm , then the length of $\overline{AC}$ can be $\dots\dots\dots$ cm.

- (a) 16 (b) 15 (c) 12 (d) 22
-

19 In the given figure :

$AX = \dots\dots\dots$ cm

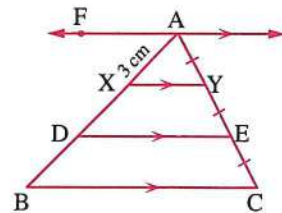
- (a) 6 (b) 8
(c) 3 (d) 4



20 In the given figure :

$AB = \dots\dots\dots$ cm

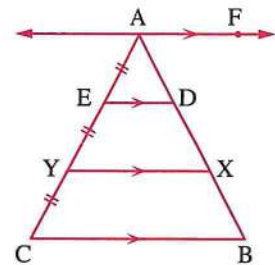
- (a) 9 (b) 6
(c) 12 (d) 15



21 In the given figure :

$AD : AB = \dots\dots\dots$

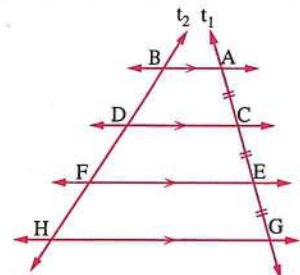
- (a) 2 : 1 (b) 1 : 2
(c) 1 : 3 (d) 3 : 1



22 In the given figure :

$BF = \dots\dots\dots$

- (a) AE (b) CG
(c) BD (d) DH



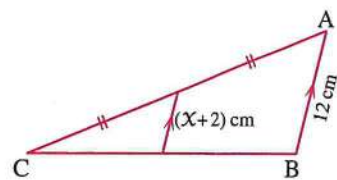
23 The length of the midsegment of a triangle equals $\dots\dots\dots$ the length of the third side.

- (a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) 2 (d) $\frac{1}{3}$

24 In the given figure :

$X = \dots\dots\dots$

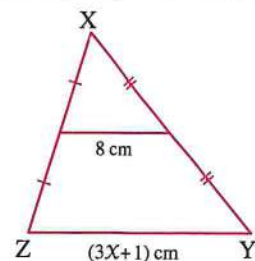
- (a) 4 (b) 6
(c) 8 (d) 12



25 In the given figure :

$X = \dots\dots\dots$

- (a) 16 (b) 15
(c) 10 (d) 5

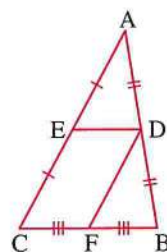


26 In the given figure :

In $\triangle ABC$, $AC = 16$ cm , $BC = 10$ cm ,

then the perimeter of the shape CEDF = cm

- (a) 26 (b) 52
(c) 13 (d) 36



27 The number of medians in any triangle is

- (a) 1 (b) 2 (c) 3 (d) 4

28 The centroid of the triangle divides each median in the ratio from the base.

- (a) 2 : 1 (b) 1 : 2 (c) 3 : 1 (d) 1 : 3

29 The centroid of the triangle divides each median in the ratio 10 : from the vertex.

- (a) 20 (b) 15 (c) 10 (d) 5

30 If $\overline{AD}$ is a median in $\triangle ABC$, M is the centroid of the triangle , then $AM = \dots\dots\dots AD$

- (a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{2}{3}$ (d) $\frac{3}{2}$

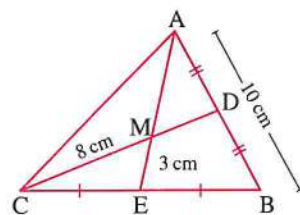
31 If $\overline{AD}$ is a median in $\triangle ABC$, its length is 12 cm , M is the centroid of the triangle , then $MD = \dots\dots\dots$ cm

- (a) 4 (b) 6 (c) 8 (d) 9

32 In the given figure :

The perimeter of $\triangle AMD = \dots\dots\dots$ cm

- (a) 21 (b) 19
(c) 15 (d) 24



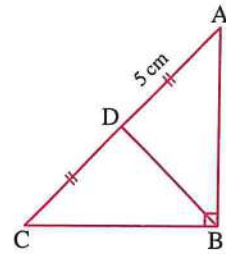
33 The length of the median drawn from the right angle in the right-angled triangle equals length of the hypotenuse.

- (a) half (b) double (c) one third (d) three times

34 In the given figure :

$AD = 5$ cm , $\overline{BD}$ median ,
then $BD = \dots\dots\dots$ cm

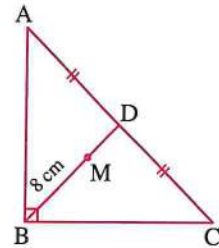
- (a) 5 (b) 7.5
(c) 10 (d) 15



35 In the given figure :

If M is the centroid of $\triangle ABC$ which is right-angled at B ,
 $\overline{BD}$ is a median , $BM = 8$ cm ,
then $AC = \dots\dots\dots$ cm.

- (a) 8 (b) 12
(c) 16 (d) 24



36 The base angles of an isosceles triangle are

- (a) supplementary. (b) adjacent.
(c) congruent. (d) corresponding.

37 In $\triangle ABC$, if $AB = AC$, $m(\angle A) = 58^\circ$, then $m(\angle C) = \dots\dots\dots$

- (a) 58° (b) 122° (c) 119° (d) 61°

38 In $\triangle STR$, if $ST = SR$, $m(\angle T) = 72^\circ$, then $m(\angle R) = \dots\dots\dots$

- (a) 72° (b) 144° (c) 108° (d) 36°

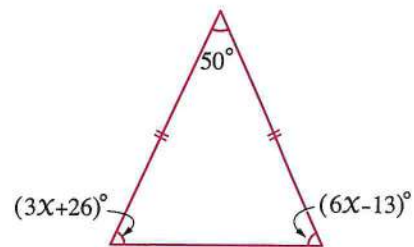
39 In $\triangle XYZ$, if $XY = XZ$, $m(\angle Z) = 64^\circ$, then $m(\angle X) = \dots\dots\dots$

- (a) 64° (b) 52° (c) 124° (d) 104°

40 In the given figure :

$x = \dots\dots\dots$

- (a) 50 (b) 65
(c) 13 (d) 15



41 ABC is an isosceles triangle where $m(\angle A) = 100^\circ$, then $m(\angle B) = \dots\dots\dots$

- (a) 80° (b) 40° (c) 100° (d) 140°

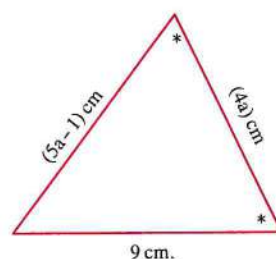
42 If $\triangle XYZ$ is right-angled at Y , $XY = YZ$, then $m(\angle X) = \dots\dots\dots$

- (a) 90° (b) 45° (c) 60° (d) 30°

43 In the given figure :

$a = \dots\dots\dots$

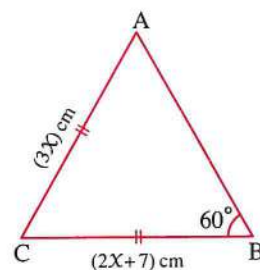
- (a) 9 (b) 8
(c) 5 (d) 2



44 In the given figure :

The perimeter of $\triangle ABC = \dots\dots\dots$ cm

- (a) 7 (b) 21
(c) 42 (d) 63



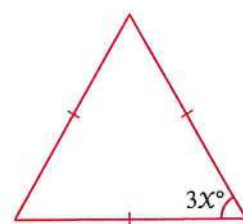
45 The measure of the exterior angle of an equilateral triangle is

- (a) 90° (b) 120° (c) 60° (d) 180°

46 In the given figure :

$x = \dots\dots\dots$

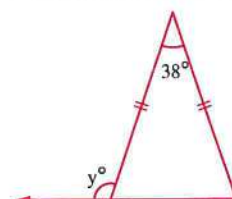
- (a) 20 (b) 60
(c) 120 (d) 180



47 In the given figure :

$y = \dots\dots\dots$

- (a) 142 (b) 71
(c) 109 (d) 104



48 In $\triangle ABC$ if $AB = AC$, $m(\angle A) : m(\angle B) = 1 : 4$,
then $m(\angle A) = \dots\dots\dots$

- (a) 40° (b) 80° (c) 20° (d) 100°

49 The number of axes of symmetry of the scalene triangle is

- (a) 0 (b) 1 (c) 2 (d) 3

50 The number of axes of symmetry of the isosceles triangle is

- (a) 1 (b) 2 (c) 3 (d) 4

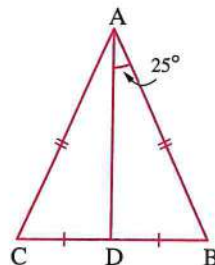
51 The number of axes of symmetry of the equilateral triangle is

- (a) 1 (b) 2 (c) 3 (d) 0

52 In the given figure :

$m(\angle C) = \dots\dots\dots$

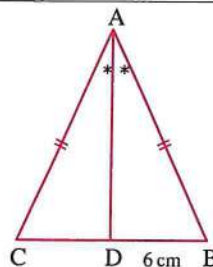
- (a) 50° (b) 75°
(c) 65° (d) 130°



53 In the given figure :

$BC = \dots\dots\dots$ cm

- (a) 6 (b) 12
(c) 18 (d) 15



54 If D belongs to the axis of symmetry of $\overline{AB}$, then $AD - BD = \dots\dots\dots$

- (a) 0 (b) $2 AD$ (c) $2 BD$ (d) $2 AB$

55 If triangle ABC has one axis of symmetry, $m(\angle B) = 90^\circ$, then $m(\angle A) = \dots\dots\dots$

- (a) 45° (b) 30° (c) 60° (d) 50°

56 If triangle ABC has one axis of symmetry, $m(\angle B) = 90^\circ$, $AB = 5$ cm, then $AC = \dots\dots\dots$ cm

- (a) 5 (b) 10 (c) $5\sqrt{2}$ (d) $10\sqrt{2}$

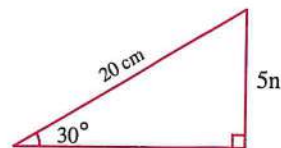
57 The length of the side opposite to the angle of measure 30° in the right-angled triangle equals the length of the hypotenuse.

- (a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) 2 (d) $\frac{1}{3}$

58 In the given figure :

$n = \dots\dots\dots$

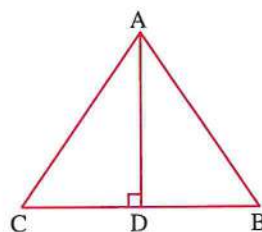
- (a) 2 (b) 3
(c) 10 (d) 5



59 In the given figure :

$\triangle ABC$ is an equilateral triangle, $\overline{AD} \perp \overline{BC}$, $BD = 4$ cm, then the length of $\overline{AD} = \dots\dots\dots$ cm

- (a) 4 (b) $4\sqrt{3}$
(c) 8 (d) $8\sqrt{3}$



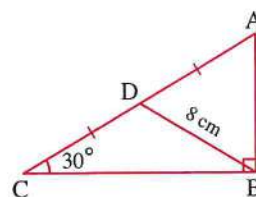
60 The length of the hypotenuse equals $\dots\dots\dots$ the length of the side opposite to the angle of measure 30° in the right-angled triangle.

- (a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{4}$ (d) 2

61 In the given figure :

The length of $\overline{AB} = \dots\dots\dots$ cm

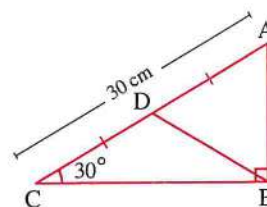
- (a) 4 (b) 8
(c) 12 (d) 16



62 In the given figure :

The perimeter of $\triangle ABD = \dots\dots\dots$ cm

- (a) 15 (b) 30
(c) 45 (d) 60



63 $\triangle ABC$ is a right-angled triangle at B, $m(\angle C) : m(\angle A) = 2 : 1$, $AC = 18$ cm, then $BC = \dots\dots\dots$ cm.

- (a) 18 (b) 9 (c) $9\sqrt{3}$ (d) $18\sqrt{3}$

64 The sum of the measures of the interior angles of the quadrilateral is $\dots\dots\dots$

- (a) 180° (b) 360° (c) 540° (d) 720°

65 The number of sides of the convex polygon whose sum of measures of its interior angles is 1800° is $\dots\dots\dots$

- (a) 8 (b) 9 (c) 10 (d) 12

66 The measure of the interior angle of a regular octagon is $\dots\dots\dots$

- (a) 120° (b) 144° (c) 135° (d) 108°

67 The number of diagonals in a decagon is $\dots\dots\dots$

- (a) 35 (b) 20 (c) 22 (d) 42

68 If the measure of an interior angle in a regular polygon is 108° , then it has sides.

- (a) 4 (b) 5 (c) 6 (d) 7

69 The sum of the measures of the exterior angles of an octagon is

- (a) 360° (b) 540° (c) 720° (d) 1080°

70 A convex polygon with 14 diagonals has sides.

- (a) 4 (b) 5 (c) 6 (d) 7

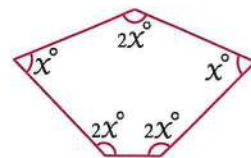
71 A regular convex polygon with 20 diagonals and a side length of 8 cm has a perimeter of cm

- (a) 40 (b) 64 (c) 72 (d) 80

72 In the given figure :

$x = \dots\dots\dots$

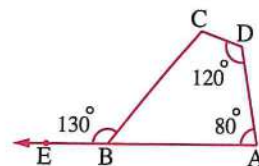
- (a) 54 (b) 64
(c) 67.5 (d) 72



73 In the given figure :

$m(\angle C) = \dots\dots\dots$

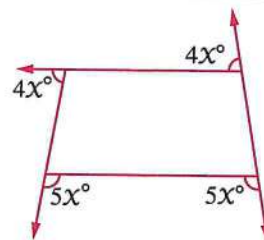
- (a) 50° (b) 100°
(c) 110° (d) 120°



74 In the given figure :

$x = \dots\dots\dots$

- (a) 15 (b) 20
(c) 80 (d) 100



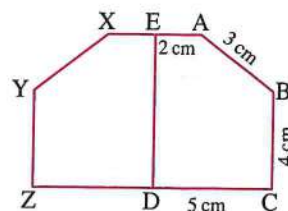
Second Essay questions

1 In the given figure :

The polygon $ABCDE \cong$ the polygon $XYZDE$

Find :

- ① The length of $\overline{ZC}$
- ② The perimeter of the shape $ABCZYX$



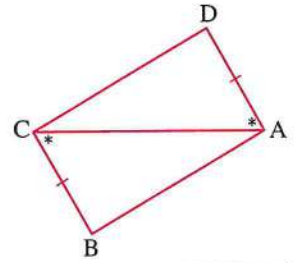
2 In the given figure :

$$BC = AD, m(\angle ACB) = m(\angle CAD)$$

Prove that :

① $\triangle ABC \cong \triangle CDA$

② $\overline{AB} \parallel \overline{CD}$

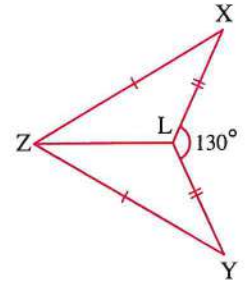


3 In the given figure :

$$XZ = YZ, XL = YL, m(\angle XLY) = 130^\circ$$

Prove that : $\triangle XZL \cong \triangle YZL$

, then find : $m(\angle XLZ)$



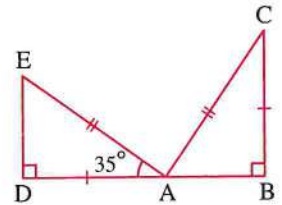
4 In the given figure :

$$m(\angle DAE) = 35^\circ, m(\angle B) = m(\angle D) = 90^\circ,$$

$$BC = AD, AC = AE$$

① **Prove that :** $\triangle ABC \cong \triangle EDA$

② **Find :** $m(\angle C)$



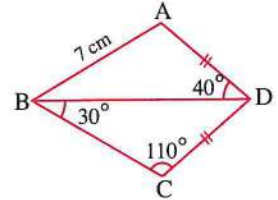
5 In the given figure :

$$CD = AD, m(\angle BCD) = 110^\circ, m(\angle CBD) = 30^\circ,$$

$$m(\angle ADB) = 40^\circ$$

① **Prove that :** $\triangle ABD \cong \triangle CBD$

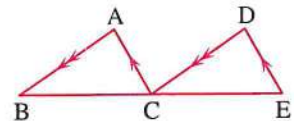
② **Find :** The length of $\overline{BC}$



6 In the given figure :

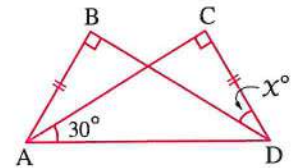
$$\overline{AB} \parallel \overline{DC}, \overline{AC} \parallel \overline{DE}, \overline{BC} \cong \overline{CE}$$

Prove that : $\triangle BAC \cong \triangle CDE$



7 In the given figure :

Find : The value of x

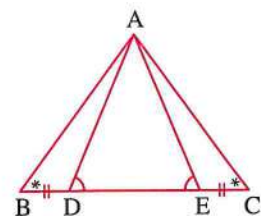


8 In the given figure :

$$\overline{BD} \cong \overline{CE}, \angle B \cong \angle C,$$

$$\angle ADE \cong \angle AED$$

Prove that : $\triangle ABD \cong \triangle ACE$

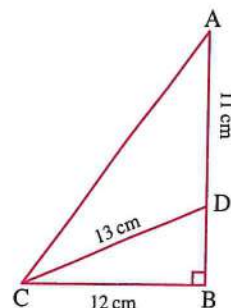


9 In the given figure :

$CD = 13 \text{ cm}$, $AD = 11 \text{ cm}$, $BC = 12 \text{ cm}$,

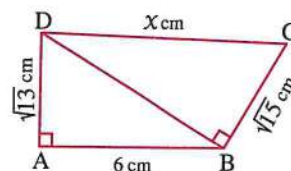
$m(\angle B) = 90^\circ$

Find : The length of each of $\overline{AC}$ and $\overline{AB}$



10 In the given figure :

Find : The value of x

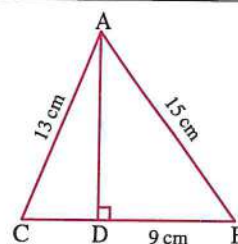


11 In the given figure :

$\overline{AD} \perp \overline{BC}$, $AB = 15 \text{ cm}$, $AC = 13 \text{ cm}$, $BD = 9 \text{ cm}$

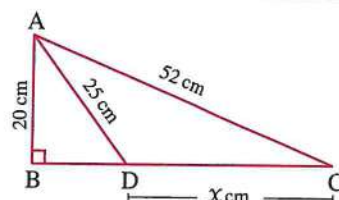
Find : ① The length of each of $\overline{AD}$ and $\overline{BC}$

② The area of $\triangle ABC$



12 In the given figure :

Find : The value of x

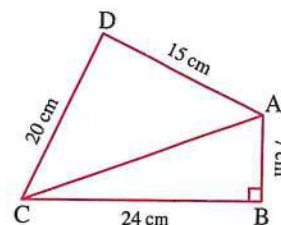


13 In the given figure :

$m(\angle B) = 90^\circ$, $AB = 7 \text{ cm}$, $BC = 24 \text{ cm}$,

$AD = 15 \text{ cm}$, $CD = 20 \text{ cm}$

Prove that : $m(\angle D) = 90^\circ$

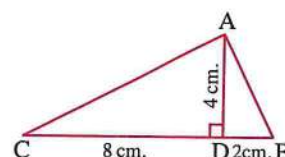


14 In the given figure :

$\overline{AD} \perp \overline{BC}$, $AD = 4 \text{ cm}$, $BD = 2 \text{ cm}$,

$CD = 8 \text{ cm}$

Prove that : $m(\angle BAC) = 90^\circ$



15 Determine the type of each triangle based on the measures of its angles if the lengths of its sides are :

① 6 cm , 3 cm , 5 cm

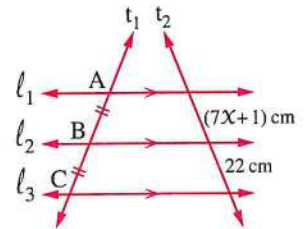
② 7.5 cm , 6 cm , 8 cm

③ 40 cm , 32 cm , 24 cm

- 16** Determine the type of $\angle X$ in $\triangle XYZ$ if $XY = 16$ cm , $XZ = 9$ cm , $YZ = 18$ cm

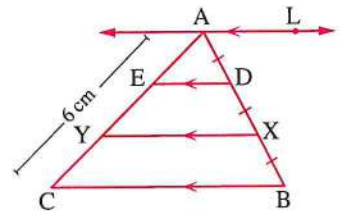
- 17** In the given figure :

Find : The value of X



- 18** In the given figure :

Find : The length of $\overline{AY}$



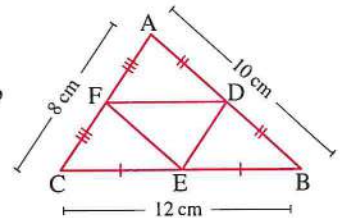
- 19** In the given figure :

D , E and F are the midpoints of $\overline{AB}$, $\overline{BC}$ and $\overline{AC}$ respectively ,

$AB = 10$ cm , $BC = 12$ cm ,

$AC = 8$ cm

Find : The perimeter of the triangle DEF

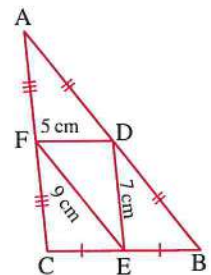


- 20** In the given figure :

D , E and F are the midpoints of $\overline{AB}$, $\overline{BC}$ and $\overline{AC}$ respectively ,

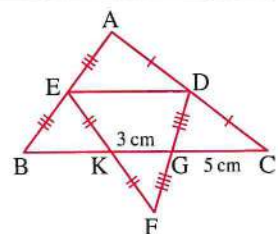
$FD = 5$ cm , $ED = 7$ cm , $EF = 9$ cm

Find : The perimeter of the triangle ABC



- 21** In the given figure :

Find with proof : The length of $\overline{BK}$

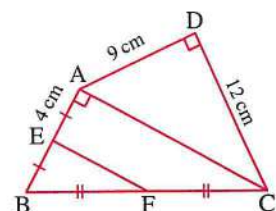


- 22** In the given figure :

In the quadrilateral ABCD :

E and F are the midpoints of $\overline{AB}$ and $\overline{BC}$ respectively

Find : The area of $\triangle BEF$

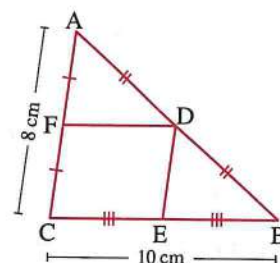


23 In the given figure :

D, E and F are the midpoints of $\overline{AB}$, $\overline{BC}$ and $\overline{AC}$ respectively,
 $BC = 10 \text{ cm}$, $AC = 8 \text{ cm}$

Prove that :

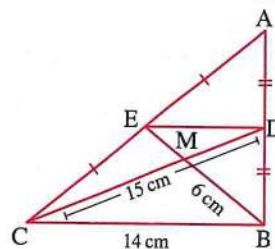
CEDF is a parallelogram and then find its perimeter.



24 In the given figure :

D and E are the midpoints of $\overline{AB}$ and $\overline{AC}$ respectively,
 $BM = 6 \text{ cm}$, $CD = 15 \text{ cm}$, $BC = 14 \text{ cm}$

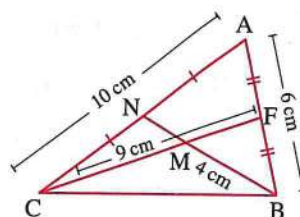
Find : The perimeter of the triangle EMD



25 In the given figure :

F and N are the midpoints of $\overline{AB}$ and $\overline{AC}$ respectively,
 $AB = 6 \text{ cm}$, $AC = 10 \text{ cm}$, $BM = 4 \text{ cm}$,
 $CF = 9 \text{ cm}$

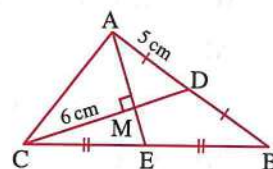
Find : The perimeter of the shape AFMN



26 In the given figure :

M is the centroid of $\triangle ABC$,
 $\overline{CD} \perp \overline{AM}$, $MC = 6 \text{ cm}$, $AD = 5 \text{ cm}$

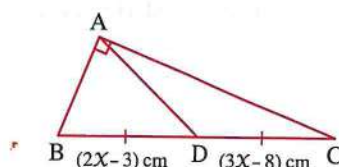
Find : The length of $\overline{ME}$



27 In the given figure :

If $\overline{AD}$ is a median of the $\triangle ABC$,
 $\triangle ABC$ is right angled at A

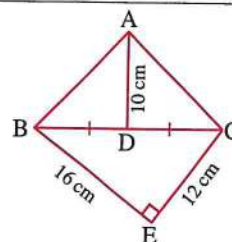
Find : The length of $\overline{AD}$



28 In the given figure :

If D is the midpoint of $\overline{BC}$

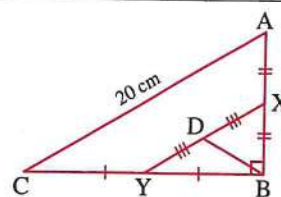
Prove that : $m(\angle BAC) = 90^\circ$



29 In the given figure :

$m(\angle ABC) = 90^\circ$, X, Y and D are the midpoints of
 $\overline{AB}$, $\overline{BC}$ and $\overline{XY}$ respectively, $AC = 20 \text{ cm}$

Find : The length of $\overline{BD}$



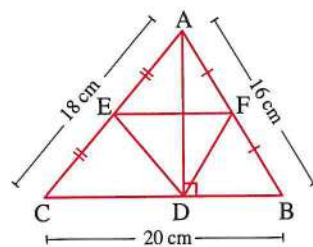
30 In the given figure :

$AB = 16 \text{ cm}$, $AC = 18 \text{ cm}$, $BC = 20 \text{ cm}$,

F and E are the midpoints of $\overline{AB}$ and $\overline{AC}$ respectively ,

$\overline{AD} \perp \overline{BC}$

Find : The perimeter of $\triangle DEF$

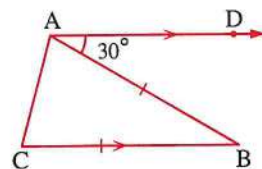


31 In the given figure :

$\overline{AD} \parallel \overline{BC}$, $AB = CB$,

$m(\angle BAD) = 30^\circ$

Find : $m(\angle ACB)$

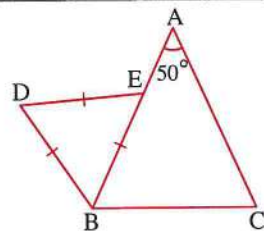


32 In the given figure :

$\triangle BED$ is an equilateral triangle ,

$AB = AC$, $m(\angle A) = 50^\circ$

Find : $m(\angle CBD)$

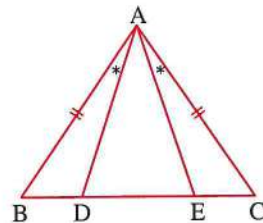


33 In the given figure :

$AB = AC$,

$m(\angle BAD) = m(\angle CAE)$

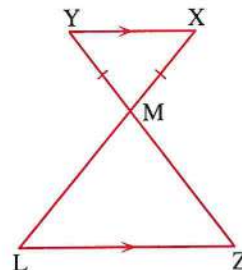
Prove that : $AD = AE$



34 In the given figure :

$XM = YM$, $\overline{XY} \parallel \overline{LZ}$

Prove that : $\triangle LMZ$ is an isosceles triangle.



35 In the given figure :

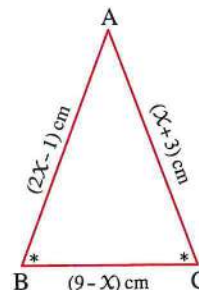
$m(\angle B) = m(\angle C)$,

$AB = (2x - 1) \text{ cm}$,

$AC = (x + 3) \text{ cm}$,

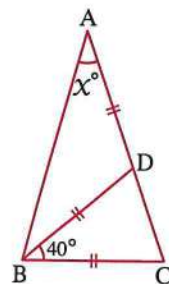
$BC = (9 - x) \text{ cm}$

Find : The perimeter of $\triangle ABC$



36 In the given figure :

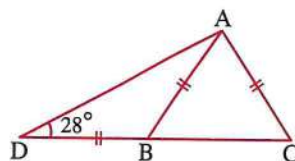
Find : The value of x



37 In the given figure :

$B \in \overline{DC}$, $m(\angle D) = 28^\circ$

Find with proof : $m(\angle CAD)$



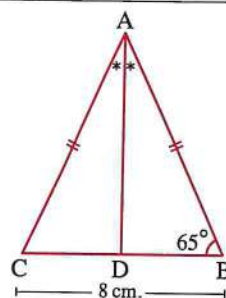
38 In the given figure :

$AB = AC$, $\overline{AD}$ bisects $\angle ABC$,

$BC = 8$ cm

Find : ① The length of $\overline{BD}$

② $m(\angle CAD)$



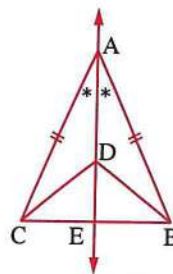
39 In the given figure :

$AB = AC$, $m(\angle BAE) = m(\angle CAE)$

Prove that :

① $BE = \frac{1}{2} BC$

② $BD = CD$

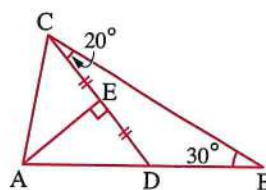


40 In the given figure :

$m(\angle DCB) = 20^\circ$, $m(\angle B) = 30^\circ$,

$\overline{AE} \perp \overline{CD}$, $CE = DE$

Find with proof : $m(\angle CAE)$

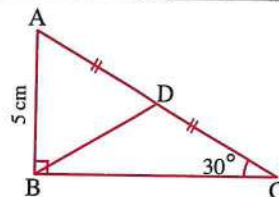


41 In the given figure :

$m(\angle ABC) = 90^\circ$, $m(\angle C) = 30^\circ$, $AB = 5$ cm ,

D is the midpoint of $\overline{AC}$

Find : The length of each of $\overline{BD}$ and $\overline{AC}$

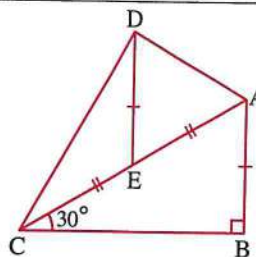


42 In the given figure :

$AB = DE$, $m(\angle B) = 90^\circ$,

$m(\angle C) = 30^\circ$, E is the midpoint of $\overline{AC}$

Prove that : $m(\angle ADC) = 90^\circ$



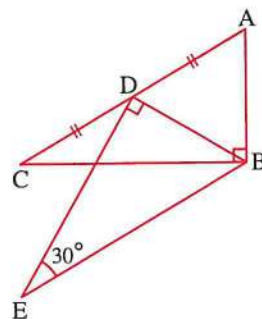
43 In the given figure :

$$m(\angle ABC) = m(\angle BDE) = 90^\circ,$$

$$m(\angle E) = 30^\circ,$$

D is the midpoint of $\overline{AC}$

Prove that : $AC = BE$

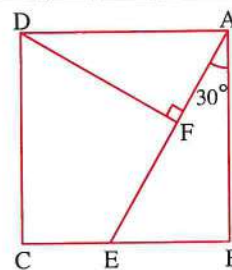


44 In the given figure :

ABCD is a square, $m(\angle BAE) = 30^\circ$,

$\overline{DF} \perp \overline{AE}$, $AF = 4$ cm

Find : The area of the square ABCD

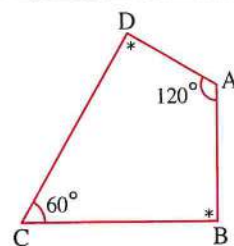


45 In the given figure :

ABCD is a quadrilateral, $m(\angle A) = 120^\circ$,

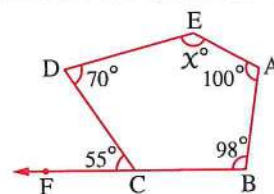
$m(\angle C) = 60^\circ$, $m(\angle B) = m(\angle D)$

Find : $m(\angle D)$



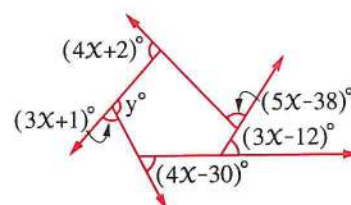
46 In the given figure :

Find : The value of x



47 In the given figure :

Find : The value of each x and y



Important questions on unit four



First Multiple choice questions

1 If the lower limit of an interval is 60 and the upper limit is 70 , then the center of the interval is

- (a) 60 (b) 65 (c) 70 (d) 75

2 If the lower limit of an interval is 42 and the upper limit is 50 , then the length of the interval is

- (a) 8 (b) 46 (c) 42 (d) 48

3 If $\bar{x} = 38$, $\sum (f \cdot x_m) = 1,900$, then $\sum f = \dots\dots\dots$

- (a) 100 (b) 3,800 (c) 50 (d) 72

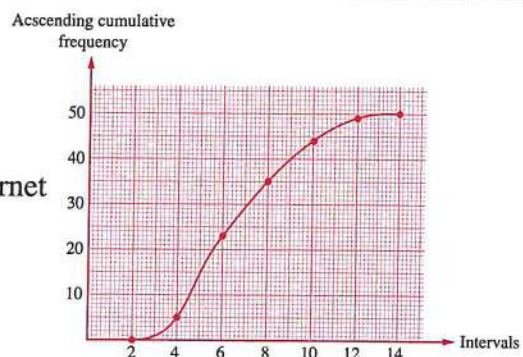
4 The center of the third interval in the intervals 5 – , 10 – , 15 – , 20 – is

- (a) 15 (b) 17.5 (c) 20 (d) 22.5

5 The given figure represents the ascending cumulative frequency curve of the number of hours of internet usage for a group of students

First : The number of students who used the internet for less than 6 hours is

- (a) 5 (b) 18
(c) 23 (d) 12



Second : The number of students who used the internet for 8 hours or more is

- (a) 6 (b) 15 (c) 44 (d) 50

Third : The percentage of students who used the internet for 10 hours or more is

- (a) 88 % (b) 12 % (c) 70 % (d) 30 %

Fourth : The median equals approximately.

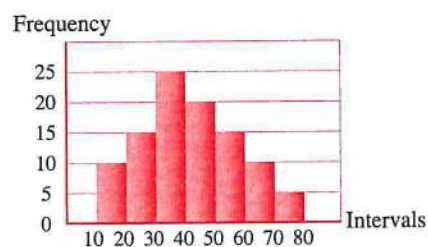
- (a) 6.5 (b) 7.2 (c) 5.8 (d) 8.1

6 If $\sum f = 40$, $\sum (f \cdot x_m) = 880$, then $\bar{x} = \dots\dots\dots$

- (a) 22 (b) 11 (c) 44 (d) 88

- 7 From the given histogram :
The modal interval is

(a) 40 – (b) 30 –
(c) 60 – (d) 80 –



- 8 If the upper limit of an interval is 58 and its center is 54 , then its lower limit is
(a) 56 (b) 52 (c) 60 (d) 50

Second Essay questions

- 1 The following frequency distribution shows the marks of 20 students in mathematics :

Intervals	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

Estimate the arithmetic mean.

- 2 The following frequency distribution shows the marks of 35 students in mathematics.
Draw the histogram and from the graph estimate the modal mark :

Intervals	2 –	4 –	6 –	8 –	10 –	Total
Frequency	5	8	10	8	4	35

- 3 The following table shows the frequency distribution of the masses of 20 children in kilograms :

Intervals	5 –	15 –	25 –	35 –	45 –	Total
Frequency	3	4	7	4	2	20

Estimate the median.

- 4 If the arithmetic mean of the following frequency distribution is 36.6 , find the value of each of : k and Σ

Intervals	10 –	20 –	30 –	Σ –	50 –
Frequency	12	20	k	30	15

Answers of important questions on unit one

First Answers of multiple choice questions

- 1** (d) **2** (a) **3** (d) **4** (b) **5** (b)
6 (c) **7** (b) **8** (a) **9** (a) **10** (d)
11 (b) **12** (a) **13** (d) **14** (d) **15** (c)
16 (b) **17** (c) **18** (a) **19** (d) **20** (c)
21 (c) **22** (b) **23** (a) **24** (d) **25** (b)
26 (c) **27** (d) **28** (b) **29** (b) **30** (a)
31 (c) **32** (c) **33** (b) **34** (a) **35** (c)
36 (b) **37** (d) **38** (c) **39** (d) **40** (c)
41 (b) **42** (b) **43** (c) **44** (b) **45** (c)
46 (d) **47** (b) **48** (b) **49** (c) **50** (a)
51 (c) **52** (b) **53** (c) **54** (a)

Second Answers of essay questions

- 1** **1** $\sqrt{11}$ lies between 3, 4
2 $\sqrt[3]{20}$ lies between 2, 3
2 The order from smallest to greatest is :
 $\sqrt{40}, 6.\overline{36}, 6\frac{4}{5}, 7$
3 **1** The solution set = $\{2\sqrt[3]{2}\}$
2 $X = \pm\sqrt{-4} \notin \mathbb{R}$
 $\therefore$ The solution set = $\emptyset$
3 The solution set = $\{1\}$
4 **1** The solution set = $\{\sqrt[3]{2}\}$
2 The solution set = $\{-\sqrt{6}, \sqrt{6}\}$
3 $X = -1 \notin \mathbb{Q}$, $X = 3 \notin \mathbb{Q}$
 $\therefore$ The solution set = $\emptyset$
5 The length of the diagonal = $\sqrt{128} = 8\sqrt{2}$ cm

- 6** **1** $[2, \infty[$
2 $[-1, 3[$
3 $]-\infty, 1[$
4 $]0, \infty[$



- 7** **1**

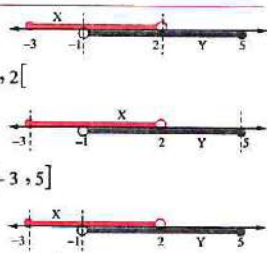
$$X \cap Y =]-1, 2[$$

- 2**

$$X \cup Y = [-3, 5]$$

- 3**

$$X - Y = [-3, -1]$$



- 8**

$$A \cup B = \mathbb{R}$$

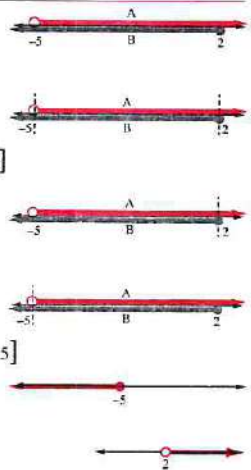
$$A \cap B =]-5, 2]$$

$$A - B =]2, \infty[$$

$$B - A =]-\infty, -5]$$

$$\hat{A} =]-\infty, -5]$$

$$\hat{B} =]2, \infty[$$



9 **1** $6\sqrt{5} + 4\sqrt[3]{2}$ **2** $-5 + 3\sqrt{7}$

3 $7 + \sqrt{5}$ **4** $29 - 12\sqrt{5}$

10 **1** $-3\sqrt{3}$ **2** -12 **3** $-13\sqrt{3}$

11 16

12 The area of the square = 50 cm^2

13 The perimeter of the rectangle = $12\sqrt{3} \text{ cm}$.

The area of the rectangle = 11 cm^2

14 ☐ 0 ☐ $4\sqrt[3]{3}$ ☐ $\sqrt[3]{2}$

☐ $7\sqrt[3]{3}$ ☐ 10

15 ☐ $4\sqrt{35}$ ☐ $2\sqrt{7}$

16 24

17 $\frac{5}{3}$

18 The area = 36 cm^2

19 ☐ 3 ☐ $\frac{\sqrt{2}}{5}$ ☐ $4x^6y^6$

20 $\frac{7}{8}$

21 ☐ 12 ☐ $\frac{4}{3}$ ☐ 144

Answers of important questions on unit two

First Answers of multiple choice questions

1 (c) 2 (b) 3 (d) 4 (a) 5 (b)

6 (a) 7 (a) 8 (c) 9 (d) 10 (a)

11 (c) 12 (d) 13 (a) 14 (c) 15 (b)

16 (c) 17 (c) 18 (b) 19 (b) 20 (b)

21 (c) 22 (c) 23 (a) 24 (c) 25 (d)

26 (c) 27 (b) 28 (c) 29 (a) 30 (b)

31 (d) 32 (a) 33 (c) 34 (b) 35 (c)

36 (c) 37 (a) 38 (c) 39 (d) 40 (a)

41 (a) 42 (d) 43 (c) 44 (b) 45 (b)

46 (c) 47 (a) 48 (c) 49 (b) 50 (a)

51 (c) 52 (b) 53 (b) 54 (a) 55 (c)

56 (d) 57 (a) 58 (b) 59 (a) 60 (b)

Second Answers of essay questions

1

1 $9x(3x^2 + 1)$ 2 $8(x^2 - 3)$

3 $7ab^2(a^2b^2 - 3b + 4a)$

4 $-4x(x^2 - 4x - 3)$ 5 $a^2(6a^2 - 5)$

6 $(2a - 5)(3x + y)$

7 $(2a - 3b)(5a + 4b)$

8 $(x + 5)[(x + 5) - y]$

9 $(a - 4)(a - 1)$ 10 $(x + 2)^2(x)$

11 $(x + 3)(x + 5)$ 12 $(x - 3)(x - 4)$

13 $(x + 15)(x - 2)$ 14 $(x - 6)(x + 3)$

15 $(3x + 1)(x + 2)$ 16 $(2x - 3)(x + 2)$

17 $(2x - 3)(x - 1)$ 18 $(2x + 3)(x - 4)$

19 $(5x - 3)^2$ 20 $3(x + 4)^2$

21 $(7x + 5y)^2$ 22 $5(2x^2 + 3y^2)^2$

23 $(3x - 4)(3x + 4)$ 24 $3(x - 5)(x + 5)$

25 $(2x + 5)(4x^2 - 10x + 25)$

26 $3(x - 3)(x^2 + 3x + 9)$

27 $(a + 0.2)(a^2 - 0.2a + 0.04)$

28 $(a + b)(x + 5)$ 29 $(b + c)(x + y)$

30 $(y + 5)(x + 7)$ 31 $(a + b - c)(a + b + c)$

32 $(x^2 + 2y^2 - 2xy)(x^2 + 2y^2 + 2xy)$

33 $(9x^2 + 2y^2 - 6xy)(9x^2 + 2y^2 + 6xy)$

34 $(x^2 + 4)^2$ 35 $(1 - 2x)(1 + 2x)$

36 $(3x - 2y)(2x - y)$

37 $(x - 3)(x + 3)(x - 2)(x + 2)$

38 $(x + 1)^2(x - 1)$

2

1 $\emptyset$ 2 $\{0, -\frac{1}{2}\}$ 3 $\{0\}$

4 $\{2, -5\}$ 5 $\{-\frac{1}{2}, -3\}$ 6 $\{-3, 2\}$

7 $\{-2, 9\}$ 8 $\{3, 5\}$ 9 $\{-3, 4\}$

10 $\{-10, 1\}$ 11 $\{-4, -6\}$ 12 $\{-3, 8\}$

13 $\{-\frac{4}{3}, 2\}$ 14 $\{\frac{5}{7}, 1\}$ 15 $\{\frac{3}{2}, 5\}$

16 $\{-5, -1, 0\}$ 17 $\{-3\}$

18 $\{\frac{1}{2}\}$ 19 $\{\frac{3}{4}\}$ 20 $\{\frac{2}{5}\}$

21 $\{-1, 1\}$ 22 $\{-2, 2\}$

23 $\{-\frac{1}{3}, \frac{1}{3}\}$

24 $\{-6 - \sqrt{29}, -6 + \sqrt{29}\}$

25 $\{1 - \sqrt{5}, 1 + \sqrt{5}\}$

3

1 30 2 140 3 10,000

4 10,000 5 540

4 $(x - 2) \text{ cm} + (x + 11) \text{ cm}$

Answers of important questions on unit three

First Answers of multiple choice questions

- 1 (d) 2 (a) 3 (b) 4 (c) 5 (a)
6 (c) 7 (c) 8 (b) 9 (d) 10 (d)
11 (a) 12 (d) 13 (a) 14 (b) 15 (b)
16 (b) 17 (a) 18 (d) 19 (b) 20 (a)
21 (c) 22 (d) 23 (b) 24 (a) 25 (d)
26 (a) 27 (c) 28 (b) 29 (d) 30 (c)
31 (a) 32 (c) 33 (a) 34 (a) 35 (d)
36 (c) 37 (d) 38 (a) 39 (b) 40 (c)
41 (b) 42 (b) 43 (d) 44 (d) 45 (b)
46 (a) 47 (c) 48 (c) 49 (a) 50 (a)
51 (c) 52 (c) 53 (b) 54 (a) 55 (a)
56 (c) 57 (a) 58 (a) 59 (b) 60 (d)
61 (b) 62 (c) 63 (b) 64 (b) 65 (d)
66 (c) 67 (a) 68 (b) 69 (a) 70 (d)
71 (b) 72 (c) 73 (c) 74 (b)

Second Answers of essay questions

1

- 1 10 cm 2 28 cm

2 Prove it yourself.

3 Prove it yourself, $m(\angle XLZ) = 115^\circ$

4

- 1 Prove it yourself. 2 $m(\angle C) = 35^\circ$

5

- 1 Prove it yourself. 2 $BC = 7$ cm

3 $m(\angle BAD) = 110^\circ$

6 Prove it yourself.

7 $x = 30$

8 Prove it yourself.

9 $AB = 16$ cm, $AC = 20$ cm

10 $x = 8$

11

1 $AD = 12$ cm, $BC = 14$ cm

2 The area of the triangle $ABC = 84 \text{ cm}^2$

12 $x = 33$

13 Prove it yourself.

14 Prove it yourself.

15

1 An obtuse-angled triangle.

2 An acute-angled triangle.

3 A right-angled triangle.

16 $\angle X$ is acute.

17 $x = 3$

18 $AY = 4$ cm

19 The perimeter of the triangle $DEF = 15$ cm

20 The perimeter of the triangle $ABC = 42$ cm

21 $BK = 4$ cm

22 The area of the triangle $BEF = 15 \text{ cm}^2$

23 Prove it yourself, 18 cm

24 The perimeter of the triangle $EMD = 15$ cm

25 The perimeter of the shape $AFMN = 13$ cm

26 $ME = 2 \text{ cm}$

27 $AD = 7 \text{ cm}$

28 Prove it yourself.

29 $BD = 5 \text{ cm}$

30 The perimeter of the triangle DEF = 27 cm

31 $m(\angle ACB) = 75^\circ$

32 $m(\angle CBD) = 125^\circ$

33 Prove it yourself.

34 Prove it yourself.

35 The perimeter of the triangle ABC = 19 cm

36 $x = 35$

37 $m(\angle CAD) = 96^\circ$

38

1 $BD = 4 \text{ cm}$ 2 $m(\angle CAD) = 25^\circ$

39 Prove it yourself.

40 $m(\angle CAE) = 40^\circ$

41 $BD = 5 \text{ cm}$, $AC = 10 \text{ cm}$

42 Prove it yourself.

43 Prove it yourself.

44 The area of the square ABCD = 64 cm^2

45 $m(\angle D) = 90^\circ$

46 $x = 147$

47 $x = 23$, $y = 110$

Answers of important questions on unit four

First Answers of multiple choice questions

1 (b) 2 (a) 3 (c) 4 (b)

5 First : (c) Second (b)

Third : (b) Fourth : (a)

6 (a) 7 (b) 8 (d)

Second Answers of essay questions

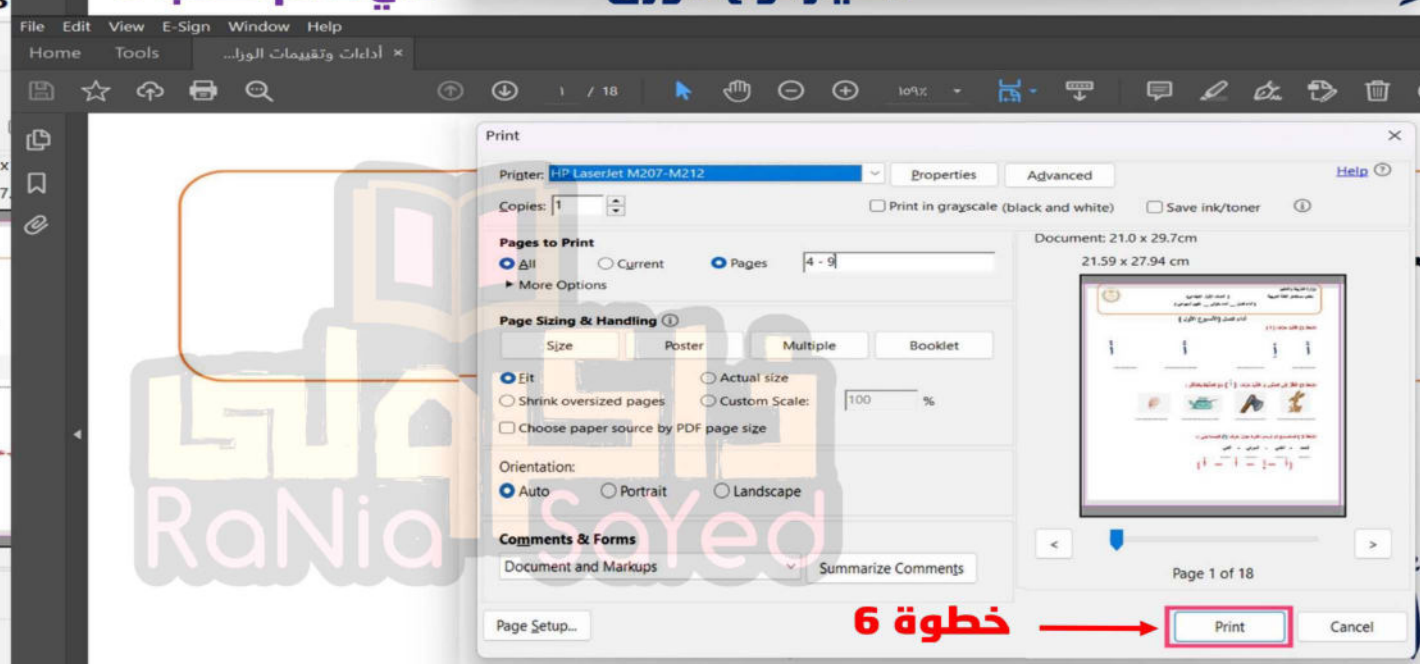
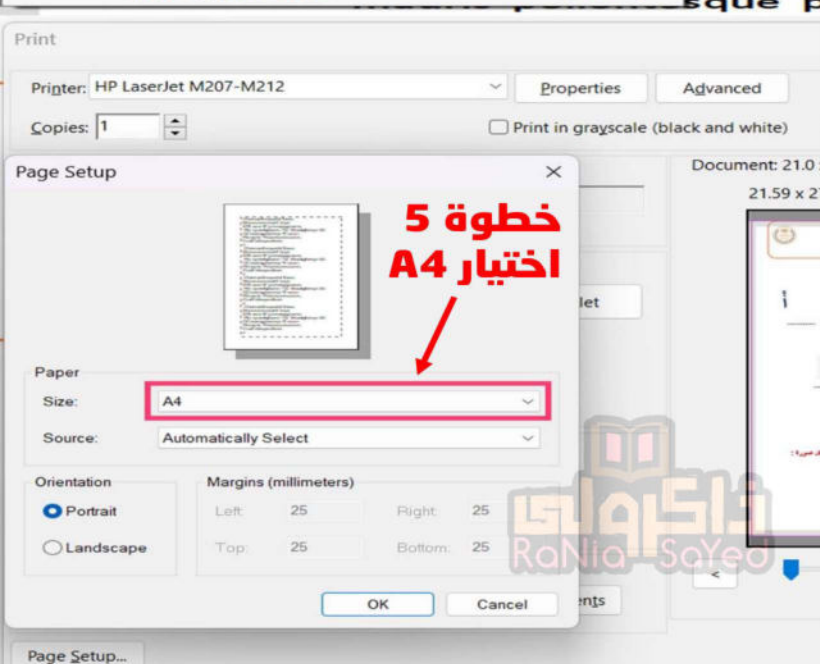
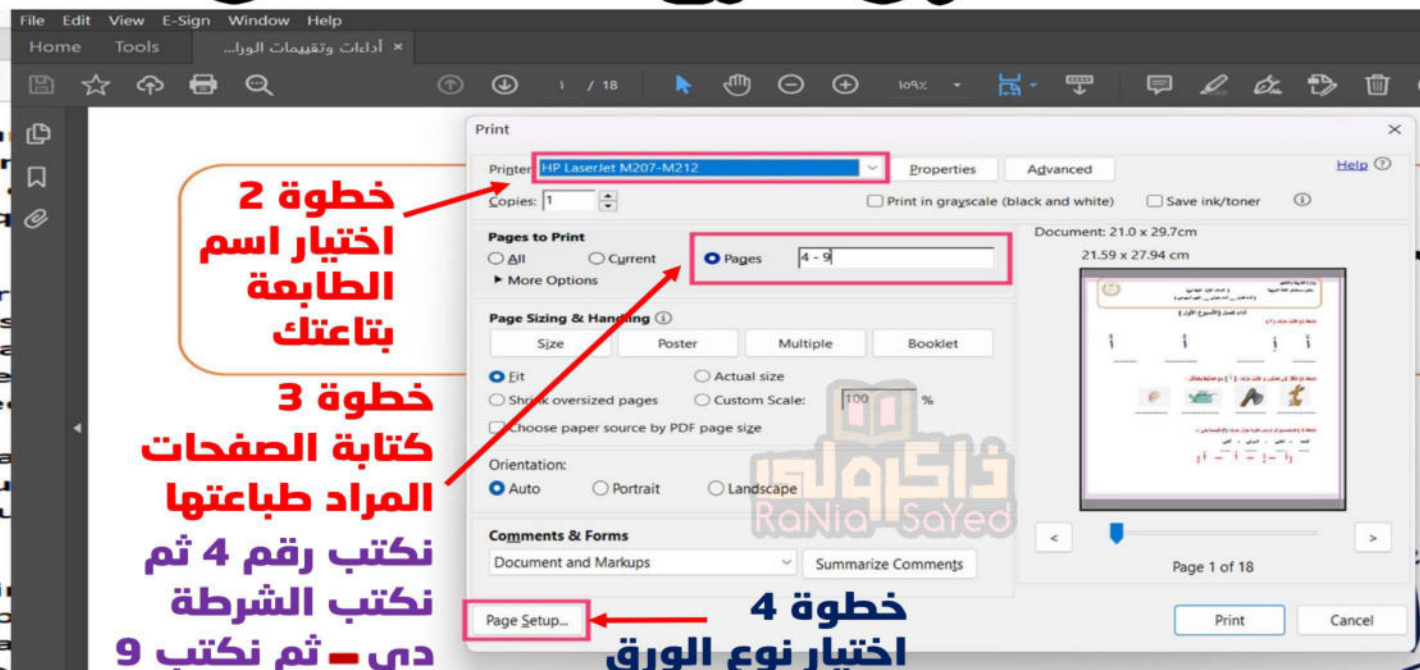
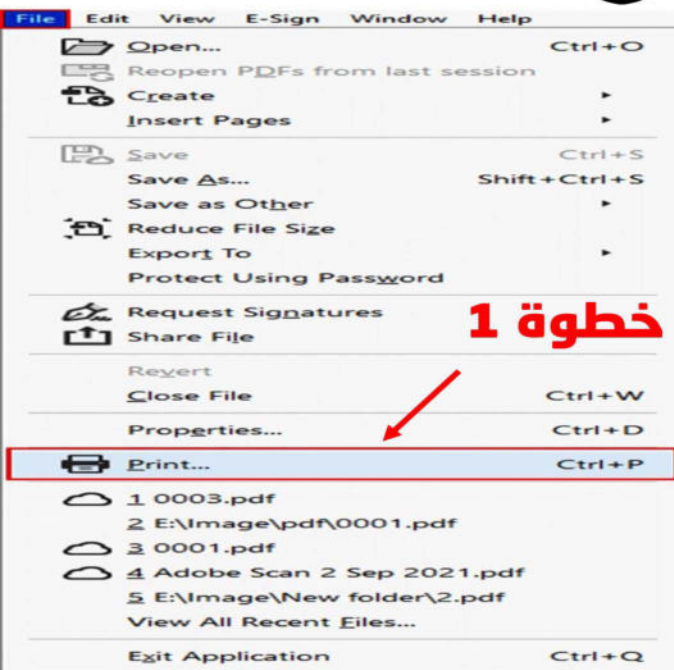
1 27

2 7

3 29 approximately.

4 $x = 40$, $k = 23$

كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



حمل الآن

مجاناً وحصرياً

المراجعة رقم (2)

الترم الاول



Unit 1

Q1 Choose the correct answer:-

1) $\mathbb{R} =$

- a) $\mathbb{Q} \cup \mathbb{Q}$ b) $\mathbb{Q} \cap \mathbb{Q}$ c) $\mathbb{N} \cup \mathbb{Z}$ d) $\mathbb{Z} \cup \mathbb{Q}$

2) Which of the following numbers is an irrational number ?

- a) 0.3 b) $\sqrt{\frac{9}{25}}$ c) $\sqrt{5}$ d) $\sqrt[3]{-125}$

3) If $X \in \mathbb{Z}$, $X < \sqrt{29} < X+1$, what is the value of X ?

- a) 4 b) 5 c) 6 d) 7

4) Estimating $\sqrt{41}$ to the closest integer is

- a) 6 b) 7 c) 36 d) 49

5) Estimating $\sqrt[3]{25}$ to closest integer is

- a) 2 b) 3 c) 5 d) 12.5

6) Which of the following numbers is an irrational number that lies between -1 and -2 ?

- a) -3 b) $-1\frac{1}{2}$ c) $-\sqrt{3}$ d) $\sqrt{2}$

7) The side length of a square with an area of 6 cm^2 is.....

- a) a natural number b) an integer. c) a rational number. d) an irrational number.

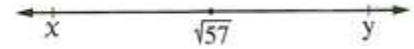
8) What is the solution set of the equation : $X^2 + 1 = 0$ in $\mathbb{R}$?

- a) $\{-1\}$ b) $\{1, -1\}$ c) $\{1\}$ d) $\emptyset$

9) If X is a negative real number, which of the following numbers is positive?

- a) X^2 b) X^3 c) $2X$ d) $\frac{x}{2}$

10) If X and Y are two consecutive integers, what is the value of $X+Y$?



- a) 11 b) 13 c) 15 d) 17

11) $R =$

- a) $R^+ \cap R^-$ b) $R^+ \cup R^-$ c) $] -\infty, \infty[$ d) $Q \cap Q'$

12) $R^+ =$

- a) $]0, \infty[$ b) $] -\infty, 0[$ c) $[0, \infty[$ d) $] -\infty, 0]$

13) $R^- =$

- a) $]0, \infty[$ b) $] -\infty, 0[$ c) $[0, \infty[$ d) $] -\infty, 0]$

14) The set of non-negative real numbers.....

- a) $]0, \infty[$ b) $] -\infty, 0[$ c) $[0, \infty[$ d) $] -\infty, 0]$

15) The set of non-positive real numbers is.....

- a) $]0, \infty[$ b) $] -\infty, 0[$ c) $[0, \infty[$ d) $] -\infty, 0]$

16) $|-4|$ $[3, \infty[$

- a) $\in$ b) $\notin$ c) $\subset$ d) $\not\subset$

17) If $a \in]2, 5[$, which of the following can be the value of a ?

- a) 1 b) 2 c) 4 d) 5

18) If $a \notin]-1, 3]$, which of the following can be the value of a ?

- a) -1 b) 0 c) 2 d) 3

19) $\sqrt[3]{-125} \dots\dots\dots]-\sqrt{25}, \sqrt{25}]$

- a) $\in$ b) $\notin$ c) $\subset$ d) $\not\subset$

20) $\mathbb{Z}^+ \dots\dots\dots]0, \infty[$

- a) $\in$ b) $\notin$ c) $\subset$ d) $\not\subset$

21) $[-3, 6] -]6, 8[= \dots\dots\dots$

- a) $\emptyset$ b) $[-3, 6]$ c) $[-3, 6[$ d) $] -3, 6[$

22) $[-4, 1] \cap [0, 1] = \dots\dots\dots$

- a) $\{1\}$ b) $] -4, 1]$ c) $[0, 1]$ d) $[0, 1[$

23) $] -\infty, 2[\cap [0, \infty [= \dots\dots\dots$

- a) $[0, 2]$ b) $[0, 2[$ c) $\mathbb{R}$ d) $\emptyset$

24) What is the interval resulting from $]2, 5[\cup \{2\}$?

- a) $]2, 5[$ b) $[2, 5]$ c) $]2, 5]$ d) $[2, 5[$

25) Which of following interval does $-\sqrt{7}$ belong to?

- a) $[-2, -1]$ b) $[-3, -2]$ c) $[-4, -3]$ d) $[-7, -6]$



26) $\mathbb{R} - \mathbb{R}^- = \dots\dots\dots$

- a) $\mathbb{R}^+$ b) $]-\infty, 0]$ c) $[0, \infty[$ d) $]-\infty, 0[$

27) What is the sum of all real number in the interval $[-75, 75]$?

- a) -75 b) 75 c) 150 d) 0

28) What is the sum of all real number in the interval $[-75, 75[$?

- a) -75 b) 75 c) 150 d) 0

29) $\{3\} \cap [3, 6] = \dots\dots\dots$

- a) $\emptyset$ b) $\{3\}$ c) $[3, 6]$ d) $\{6\}$

30) $\{8, 9, 10\} -]8, 10[= \dots\dots\dots$

- a) $\emptyset$ b) $\{8, 10\}$ c) $\{9\}$ d) $\mathbb{N}$

31) If $X \in [-3, 4]$, then $X^2 \in \dots\dots\dots$

- a) $[9, 16]$ b) $[0, 9]$ c) $[0, 16]$ d) $[-9, 0]$

32) If $a + \sqrt{5} = 0$, what is the value of a ?

- a) 0 b) $\sqrt{5}$ c) $-\sqrt{5}$ d) $\frac{1}{\sqrt{5}}$

33) If $a \times \sqrt{2} = 1$, what is the value of a ?

- a) 1 b) $\sqrt{2}$ c) $-\sqrt{2}$ d) $\frac{\sqrt{2}}{2}$

34) If $a \sqrt{5} - 4\sqrt{5} = 3\sqrt{5}$, then $\dots\dots\dots$

- a) $a = -1$ b) $a = 1$ c) $a = 7$ d) $a = 10$

35) If $(2\sqrt{3})^n = 12$, then $\dots\dots\dots$

- a) $n = 2$ b) $n = 3$ c) $n = 4$ d) $n = 6$

36) If $x = \sqrt{2} + 10$, $y = \sqrt{2} - 10$, what is the value of $(x + y)^2$?

- a) 4 b) 6 c) 8 d) $4\sqrt{2}$

37) If $\sqrt[3]{5} + 3a = 4\sqrt[3]{5}$, then

- a) $a = 1$ b) $a = \sqrt{5}$ c) $a = \sqrt[3]{5}$ d) $a = 5$

38) What is the additive inverse of the number $\frac{7}{\sqrt{7}}$ in its simplest form?

- a) $\frac{\sqrt{7}}{7}$ b) 7 c) $-\sqrt{7}$ d) -7

39) What is the multiplicative inverse of the number $\sqrt{5}$ in its simplest form?

- a) -5 b) $\frac{-1}{5}$ c) $\frac{5}{\sqrt{5}}$ d) $\frac{\sqrt{5}}{5}$

40) What is the multiplicative inverse of the number $\sqrt{3} - 2$?

- a) $2 - \sqrt{3}$ b) $\sqrt{3} + 2$ c) $-\sqrt{3} - 2$ d) $\sqrt{3} - 2$

41) If $\frac{x}{3\sqrt{2}} = \frac{y}{2\sqrt{5}} = 1$, then $x^2 + y^2 =$

- a) 36 b) 38 c) 42 d) 45

42) What is the value of: $\sqrt{18} + \sqrt{32}$?

- a) $\sqrt{50}$ b) $7\sqrt{2}$ c) $7\sqrt{4}$ d) $5\sqrt{4}$

43) What is the multiplicative inverse of the number $\sqrt{50}$?

- a) $\frac{\sqrt{2}}{10}$ b) $\frac{-\sqrt{2}}{10}$ c) $-5\sqrt{2}$ d) $5\sqrt{2}$

44) If $a\sqrt[3]{2} = \sqrt[3]{3} \times \sqrt[3]{10}$, what is the value of a ?

- a) 30 b) $\sqrt[3]{30}$ c) 15 d) $\sqrt[3]{15}$



45) If $2\sqrt{3} \times 4a = 8\sqrt{6}$, what is the value of a ?

- a) $\sqrt{2}$ b) $\sqrt{3}$ c) 2 d) $\sqrt{6}$

46) If $\frac{\sqrt{3}}{\sqrt{a}} = \frac{\sqrt{2}}{\sqrt{6}}$, what is the value of a ?

- a) $\sqrt{3}$ b) $\sqrt{6}$ c) 3 d) 9

47) If $x + \sqrt{28} = \sqrt{7}$, what is the value of x ?

- a) $\sqrt{21}$ b) $-\sqrt{21}$ c) $\sqrt{7}$ d) $-\sqrt{7}$

48) If $x = \frac{\sqrt{6}}{\sqrt{2}}$, what is the value of $\frac{1}{x}$?

- a) $\sqrt{3}$ b) $\frac{\sqrt{3}}{2}$ c) $\frac{\sqrt{3}}{3}$ d) $2\sqrt{3}$

49) What is the next number in this pattern? $\sqrt{5}, \sqrt{20}, \sqrt{45}, \sqrt{80}, \dots$

- a) $2\sqrt{5}$ b) $\sqrt{100}$ c) $\sqrt{120}$ d) $5\sqrt{5}$

50) $\sqrt[3]{3} \times \sqrt[3]{9} = \sqrt{\dots}$

- a) 27 b) 3 c) 9 d) 18

51) What is the result of $5^2 + 5^2$?

- a) 10^2 b) 10^4 c) 5^4 d) 50

52) What is the result of $3^5 \times 2^5$?

- a) 5^{10} b) 6^{10} c) 6^5 d) 6^{25}

53) What is the value of $3x^0$? where $x \neq 0$

- a) 0 b) 1 c) 3 d) $3x$



54) What is the result of $\frac{(ab)^3}{b^3}$?

- a) a^3 b) $\frac{a}{b}$ c) $\frac{a^3}{b^2}$ d) $\frac{a^2}{b^3}$

55) What is the quarter of the number 4^{20} ?

- a) 1^{10} b) 4^{19} c) 4^{16} d) 4^5

56) What is four times the number 2^8 ?

- a) 2^{32} b) 8^8 c) 2^{10} d) 4^8

57) What is the sixth of the number $2^{12} \times 3^{12}$?

- a) 6^2 b) 6^4 c) 6^{11} d) 6^{23}

58) $x^{m-1} \times \dots = 1, x \neq 0$

- a) x^{m-1} b) x^{-m-1} c) x^{m+1} d) x^{-m+1}

59) What is the perimeter of a square with an area of $a \text{ cm}^2$?

- a) $a^4 \text{ cm}$ b) $(\sqrt{a})^4 \text{ cm}$ c) $4\sqrt{a} \text{ cm}$ d) $4a \text{ cm}$

60) What is the value of $4^2 + 4^2 + 4^2 + 4^2$?

- a) 4^2 b) 4^3 c) 4^8 d) 4^{16}

61) If $2^{x-1} = 1$, what is the value of x ?

- a) 0 b) 1 c) -1 d) -2

62) If $\sqrt{6} \times (\sqrt{6})^x = 1$, what is the value of x ?

- a) 0 b) 1 c) -1 d) -2

63) What is the $\frac{1}{5}$ of the number $(\sqrt[3]{5})^6$?

- a) 5 b) 25 c) $\sqrt[3]{5}$ d) $(\sqrt[3]{5})^8$

64) If $2^x = 3$, what is the value of 2^{x+1} ?

- a) 4 b) 5 c) 6 d) 9

65) What is the value of: $\frac{2^{2n+1} \times 5^{2n+1}}{(10)^{2n}}$?

- a) $\frac{1}{10}$ b) 7 c) 10 d) 100

66) What is the value of $3^x + 3^x + 3^x$?

- a) 3^{3x} b) 3^{x+1} c) 9^x d) 9^{3x}

67) What is the value of $(\sqrt{2})^{10} + 2^5$?

- a) 2^6 b) 2^{10} c) 2^{15} d) 2^{50}

68) What is the quarter of 2^{14} ?

- a) 2^{12} b) 2^8 c) 2^{10} d) 4^8

69) If $x = \frac{\sqrt{9}}{\sqrt{3}}$, what is the value of x^{-1} ?

- a) $\frac{\sqrt{3}}{3}$ b) $\frac{\sqrt{9}}{\sqrt{2}}$ c) $\sqrt{3}$ d) 2



Q2 Complete the following :-

1) $\mathbb{R} \cap [2, 5[= \dots\dots\dots$

2) $\mathbb{R}^- \cup \mathbb{R}^+ = \dots\dots\dots$

Q3 Answer the following :-

1) The solution set in $\mathbb{Q}$ of the equation $X^2 - 5 = 2$

2) The solution set in $\mathbb{Q} \setminus$ of the equation $X^3 - 11 = 28$

3) Using the number line represent the two intervals $X = [3, 4]$, $Y =]1, 3]$
then find $X \cup Y$

4) Using the number line represent the two intervals $X = [3, 6]$, $Y =]1, 3]$
then find $X \cap Y$

5) If $A = [-1, 3]$, $B =]-\infty, 3[$, find :

- $A \cup B$
- $A \cap B$
- $A - B$
- $B - A$

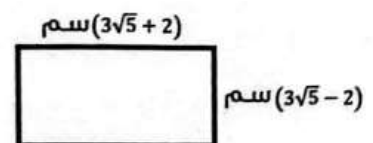
6) Find in the simplest form :-

- a) $(\sqrt{8} - 3)(\sqrt{8} + 3)$
- b) $(\sqrt{5} - 1)^2 + (\sqrt{5} - 2)(\sqrt{5} + 2)$
- c) $(\sqrt{3} - 2)^2$

7) Make the denominator an integer

- a) $\frac{10}{2\sqrt{5}}$
- b) $\frac{10}{5-\sqrt{15}}$

9) Find the area of the opposite rectangle .



10) Find the result in the simplest form :

a) $\sqrt[3]{3} + \sqrt[3]{3} = \dots\dots\dots$

b) $2\sqrt{3} + 5\sqrt{27} - 4\sqrt{48} = \dots\dots\dots$

c) $\sqrt[3]{24} + \sqrt[3]{3} - 2\sqrt[3]{81} = \dots\dots\dots$

d) $2\sqrt[3]{\frac{1}{4}} + \sqrt[3]{16} = \dots\dots\dots$

e) $\frac{(\sqrt{3})^6 \times (\sqrt{3})^4}{(\sqrt{3})^5 \times (\sqrt{3})^3} = \dots\dots\dots$

f) $\frac{(-2xy)^{-3}}{x^{-4} \times y^{-3}} = \dots\dots\dots$

11) If $X = (\sqrt{5} - 2)$, $Y = (\sqrt{5} + 2)$, find

a) $X \times Y$

b) $X + Y$

13) If the area of a square is 144 cm^2 , find its diagonal.

Unit 2

Steps to
factorize
trinomial

Q1 Answer the following :-**1) Factorize the following completely :-**

1) $2X^2 - 16X + 30$

2) $(X + 4)^2 + 3(X + 4)$

3) $-X^2 + 3X + 10$

4) $(x + 4)(x + 3) - 6$

5) $3X^2 - 11X + 6$

6) $X^2 + 14X + 49$

7) $4X^2 - 25$

8) $8X^3 + 125$

9) $a^2 b^2 - 4$

10) $x^2 + 2x + xy + 2y$

1. Rearrange

2. GCF

3. Perfect
square

4. Normal

5. Completing
square

11) $4x^4 + 1$

For more steps
watch 

12) $x^4 - 19x^2 y^2 + 9y^4$

2) Factorize :-

1) $y(y - 2) - (y - 2)$

2) $x(a - b) - y(b - a)$

3) $(x + y)^3 - 4(x + y)$

3) Find the numerical value of each of the following using factorization by taking out the greatest common factor :-

a) $6 \times \frac{5}{7} + 2 \times \frac{5}{7} - \frac{5}{7}$

b) $45 \times 55 + 45 \times 46 - 45$

4) Find the solution set of each of the following in $\mathbb{R}$:-

a) $10 Y^2 - 30 Y = 0$

b) $14x + x^2 - 32 = 0$

c) $x^3 = 49x$

d) $x^2 + 7x - 60 = 0$

Q2 Choose the correct answer:-

- 1) what is the greatest common factor between the terms of the polynomial $12x^2 - 8x$
- a) 2 b) 4 c) $2x$ d) $4x$
- 2) $49ab + 14b^2 = 7b(\text{.....} + \text{.....})$
- a) $7b + 2a$ b) $7a + 2b$ c) $42a + 7b$ d) $14ab$
- 3) $-9x^2 - 18y^2 = -9(\text{.....} + \text{.....})$
- a) $x^2 + 2y^2$ b) $x^2 - 2y^2$ c) $2x^2 + y^2$ d) $x^2 - 9y^2$
- 4) $33m^2n + 44mn^2 = \text{.....}(3m + 4n)$
- a) $11m^2n^2$ b) $11m + n$ c) $11nm^2$ d) $11mn$
- 5) $x(a + b) + y(a + b) = \text{.....}$
- a) $(x - y)(a - b)$ b) $(x + y)(a + b)$
c) $(x - y)(a + b)$ d) $(x + y)(a - b)$
- 6) If $x + 2y = 7$, then what is the value of $2x + 4y$?
- a) 14 b) 28 c) 18 d) 56
- 7) If $3x + 3y = 18$, then what is the value of $x + y$?
- a) 54 b) 15 c) 6 d) 2
- 8) Which of the following represents the factorization of the polynomial $5x - 6 - x^2$?
- a) $(x - 2)(x - 3)$ b) $(x + 2)(x + 3)$
c) $-(x + 2)(x + 3)$ d) $-(x - 2)(x - 3)$

- 9) If $(x + 3)$ is one of the factors of the trinomial $(x^2 - x - 12)$, then what is the other factor?
- a) $x + 2$ b) $x - 2$ c) $x + 4$ d) $x - 4$
- 10) If $x + 4y = 8$, $x - 3y = 5$, what is the numerical value of polynomial $(x^2 + xy - 12y^2)$?
- a) 13 b) 40 c) $\frac{8}{5}$ d) 3
- 11) If $a + 5b = 10$, $30b^2 + a^2 + 11ab = 20$, what is the numerical value of the polynomial $(6b + a)$?
- a) 2 b) 10 c) 200 d) 30
- 12) If $x^2 - 11x + 28 = (x - a)(x - b)$, what is the value of $a + b$?
- a) -16 b) -11 c) 11 d) 16
- 13) If $x^2 + ax + 15 = (x + 3)(x + b)$, what is the value of ab ?
- a) 5 b) 8 c) 13 d) 40
- 14) If $x^2 - kx + 18$ is factorizable, then k can be equal to
- a) 10 b) 12 c) -12 d) -11
- 15) If $x^2 + bx - 14$ is factorizable, then b can be equal to
- a) -15 b) 15 c) -5 d) 14
- 16) If $(x - 5)$ is one of the factors of the trinomial $(2x^2 - 7x - 15)$, what is the other factor?
- a) $x + 3$ b) $2x - 3$ c) $2x + 3$ d) $x - 3$
- 17) If $3x - 2y = 6$, $2x + 3y = 5$, what is the numerical value of the polynomial $(6x^2 + 5xy - 6y^2)$?
- a) 10 b) 11 c) 12 d) 30
- 18) Which of the following trinomials represent a perfect square?
- a) $x^2 + 25 + 5x$ b) $25 - 10x - x^2$
b) $\frac{1}{9}x^2 + 2xy + 9y^2$ d) $4x^2 + 12xy - 9y^2$

- 19) If the polynomial $(4x^2 + kx + 1)$ is a perfect square trinomial, what is the value of k ?
a) ± 1 b) ± 2 c) ± 4 d) ± 8
- 20) If the polynomial $(16x^2 - 40x + k^2)$ is a perfect square, what is the value of k ?
a) 5 b) -5 c) ± 5 d) 8
- 21) If $x = \sqrt{5} + \sqrt{2}$, $y = \sqrt{5} - \sqrt{2}$, what is the numerical value of the polynomial $(x^2 + 2xy + y^2)$?
a) 8 b) 20 c) $2\sqrt{5}$ d) 10
- 22) If $a^2 + 2ab + b^2 = 36$, what is the value of $a + b$?
a) 6 b) -6 c) ± 6 d) 18
- 23) A square has an area of $(9x^4 + 30x^2 + 25) \text{ cm}^2$, what is the length of its side in terms of x ?
a) $(3x + 5) \text{ cm}$ b) $(5x + 3) \text{ cm}$
c) $(3x^2 - 5) \text{ cm}$ d) $(3x^2 + 5) \text{ cm}$
- 24) If $x^2 - b^2 = (x - 3)(x + 3)$, what is the value of b ?
a) ± 1 b) ± 3 c) ± 6 d) ± 9
- 25) If $x^2 - 100 = k(x + 10)$, which of the following is equal to k ?
a) $x - 50$ b) $x + 10$ c) $x - 10$ d) $10x$
- 26) If $x^2 + \ell - 25 = (x - 5)(x + 5)$, what is the value of ℓ ?
a) zero b) 10 c) -10 d) 25
- 27) If $x + y = 10$, $x^2 - y^2 = 20$, what is the value of $y - x$?
a) 10 b) 2 c) -2 d) -10
- 28) If $x^2 - y^2 = 16$, $y - x = 2$, what is the value of $x + y$?
a) 4 b) 8 c) -8 d) 2

29) If $a^2 - b^2 = 45$, $a - b = 5$ what is the value of $\sqrt{a+b}$?

- a) 9 b) 3 c) -3 d) ± 3

32) If $3(a-b)(a+b) = 18$, what is the value of $a^2 - b^2$?

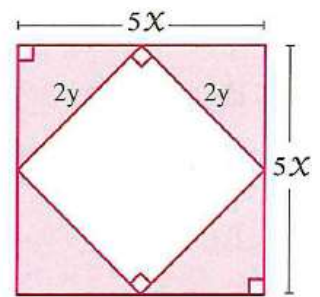
- a) 2 b) 6 c) 9 d) 18

30) If $(25)^2 - (15)^2 = 10x$, what is the value of x ?

- a) 40 b) 30 c) 20 d) 10

31) Which of the following statements represents the area of the colored region in the given figure?

- a) $5x^2 - 2y^2$ b) $25x - 4y$
 b) $(5x - 2y)^2$ d) $(5x - 2y)(5x + 2y)$



32) If $x^3 - 8 = (x + a)(x^2 + 2x + 4)$, what is the value of a ?

- a) 4 b) -4 c) 2 d) -2

33) If $x^3 + 27 = (x + 3)(x^2 + kx + 9)$, what is the value of k ?

- a) $-6x$ b) $-3x$ c) $3x$ d) $6x$

34) If $(4a^2 - 2a + 1)$ is one of the factors of the expression $(8a^3 + 1)$, what is the other factor?

- a) $a + 2$ b) $2a + 1$ c) $2a - 1$ d) $4a + 1$

35) If $x^2 - xy + y^2 = 5$, $x + y = 3$, what is the value of $x^3 + y^3$?

- a) 15 b) 25 c) 8 d) 7

36) $x^2 - ax + bx - ab = \dots\dots\dots$

- a) $(x - a)(x - b)$ b) $(x - a)(x + b)$
 b) $(x + a)(x - b)$ d) $(x + a)(x + b)$

37) If $xy + 5x + 7y + 35 = (x + a)(y + b)$, what is the value of $a - b$?

- a) 2 b) -2 c) 12 d) -12

38) If $x^3 + 5x^2 - 4x - 20 = (x + a)(x + b)(x + c)$, what is the value of $a + b + c$?

- a) 2 b) 5 c) 7 d) 9



39) When completing the square for: $(x^2 + 9)$ add

- a) $\pm 3x$ b) $\pm 6x$ c) $\pm 9x$ d) $\pm 12x$

40) When completing the square for: $(x^2 + 12x)$ add

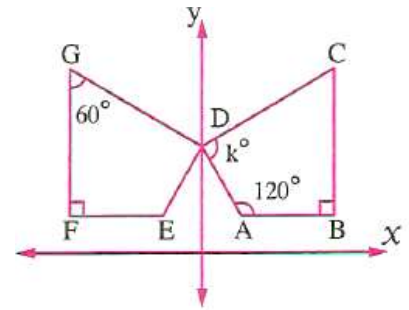
- a) ± 9 b) ± 36 c) 9 d) 36

Unit 3

Q1 Choose the correct answer:-

1) In the given figure:

The polygon EFGD is the image of the polygon ABCD by reflection in the y -axis. What is the value of k?



- a) 90 b) 60 c) 120 d) 70

2) If $\triangle ABC \cong \triangle XYZ$, $m(\angle A) + m(\angle B) = 130^\circ$, what is the measure of $\angle Z$?

- a) 65° b) 50° c) 100° d) 130°

3) If $\triangle ABC \cong \triangle LMN$, $m(\angle C) = 90^\circ$, then $m(\angle L) + m(\angle M) = \dots\dots\dots$

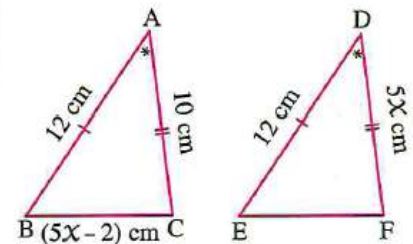
- a) 45° b) 90° c) 180° d) 120°

4) If $\triangle ABC \cong \triangle XYZ$, the perimeter of $\triangle ABC = 12$ cm, $XY = 4$ cm, $YZ = 5$ cm, what is the length $\overline{AC}$?

- a) 3 cm b) 5 cm c) 9 cm d) 12 cm

5) In the given figure : what is the length of $\overline{EF}$?

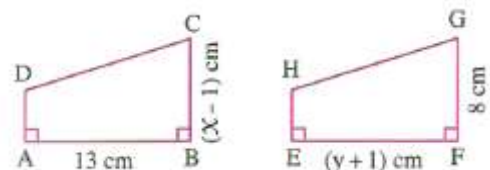
- a) 6 cm b) 8 cm
c) 10 cm d) 12 cm



6) In the given figure:

If the polygon EFGH is the image of the polygon ABCD by a translation, what is the value of $x + y$?

- a) 9 b) 12
c) 21 d) 22



7) In the given figure:

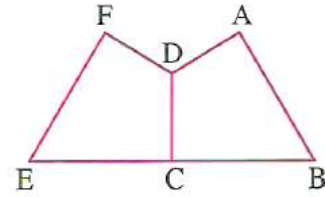
The polygon $ABCD \cong$ the polygon $FECD$

If the perimeter of the polygon

$ABCD = 24\text{ cm}$, $CD = 5\text{ cm}$,

what is the perimeter of shape $ABEFD$?

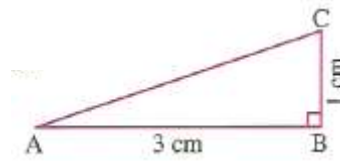
- a) 24 cm b) 38 cm
c) 48 cm d) 52 cm



8) In the given figure:

What is the area of the square drawn on $\overline{AC}$?

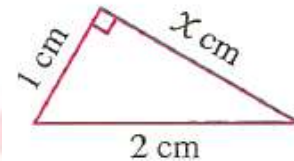
- a) 4 cm^2 b) 2 cm^2
c) 8 cm^2 d) 10 cm^2



9) In the given figure:

What is the value of x ?

- a) 1 b) 3
c) $\sqrt{5}$ d) $\sqrt{3}$



10) The triangle ABC is right-angled at B , If $AB = 24\text{ cm}$, $AC = 30\text{ cm}$, what is the length of $\overline{BC}$?

- a) $6\sqrt{41}\text{ cm}$ b) 324 cm c) 18 cm d) 6 cm

11) A rectangle with a length of 16 cm and a width of 12 cm , what is the length of its diagonal ?

- a) 28 cm b) 56 cm c) 192 cm d) 20 cm

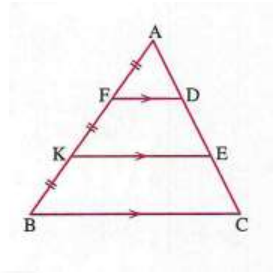


- 12) If the area of a rectangle is 60 cm^2 and its width is 5 cm , what is its diagonal length?
- a) 12 cm b) 13 cm c) 169 cm d) 34 cm
- 13) If ABCD is a square, then $(AC)^2 = \dots\dots\dots$
- a) AB b) $(AB)^2$ c) $2(AB)^2$ d) $4(AB)^2$
- 14) Which of the following numbers can be the lengths of the sides of a right-angled triangle?
- a) 7, 7, 4 b) 12, 5, 13 c) 5, 8, 7 d) 3, 7, 5
- 15) Which of the following numbers can be the lengths of the sides of an acute-angled triangle?
- a) 4, 4, $4\sqrt{2}$ b) 10, 8, 6
c) 8, 3.7, 7.5 d) 9, 6, 6
- 16) A triangle with side lengths of 5 cm, 12 cm, 13 cm, what is its area?
- a) 30 cm^2 b) 32.5 cm^2 c) 78 cm^2 d) 60 cm^2
- 17) ABC is an obtuse-angled triangle at A, $AB = 4 \text{ cm}$, $BC = 7 \text{ cm}$, then AC can be cm
- a) 5 b) 6 c) 7 d) 8
- 18) In triangle ABC ,
if $(BC)^2 + (AB)^2 = 48 \text{ cm}^2$, $CA = 7 \text{ cm}$, then $\angle B$ is
- a) acute b) right c) obtuse d) straight
- 19) In triangle XYZ ,
if $90^\circ < m(\angle Y) < 180^\circ$, then $(XZ)^2 \dots\dots\dots (XY)^2 + (YZ)^2$
- a) = b) < c) $\leq$ d) >
- 20) If $\angle A$ complements $\angle B$ in triangle ABC, then $(AB)^2 \dots\dots\dots (AC)^2 + (BC)^2$
- a) = b) < c) > d) $\neq$

21) In the given figure:

If the length of $AC=12$ cm, What is the length of $\overline{AE}$?

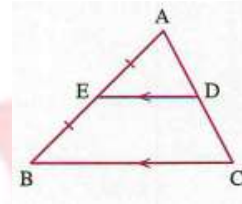
- a) 8 cm b) 4 cm c) 6 cm d) 8 cm



22) In the given figure:

What is the ratio between the length of $\overline{AD}$ and the length of $\overline{DC}$?

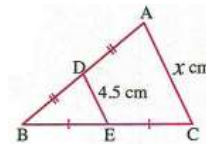
- a) 1 : 1 b) 1 : 2 c) 2 : 1 d) 1 : 3



23) In the given figure:

What is the value of X ?

- a) 9 b) 4.5 c) 13.5 d) 2.25

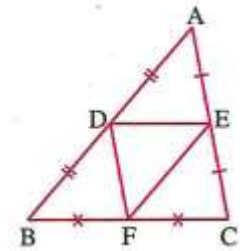


24) In the given figure:

If the perimeter of $\triangle ABC$ is equal to 18 cm ,

What is the perimeter of $\triangle DEF$?

- a) 6 cm b) 36 cm c) 9 cm d)



25) What is the number of medians of an obtuse triangle ?

- a) zero b) 1 c) 2 d) 3

26) If $\overline{YD}$ is a median of triangle XYZ , and M is the centroid of the triangle, then $MD = \dots\dots\dots YM$.

- a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{2}{3}$ d) $\frac{3}{2}$

27) If M is the centroid of the triangle ABC and $\overline{BD}$ is a median, then BD:MD=

- a) 2 : 3 b) 1 : 3 c) 3 : 2 d) 3 : 1

28) If $\overline{AD}$ is a median of triangle ABC, and M is the centroid, then AD=.....AM.

- a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{2}{3}$ d) $\frac{3}{2}$

29) If M is the centroid of the triangle ABC and D is The midpoint of $\overline{BC}$, then AD=

- a) 2AM b) $\frac{2}{3}$ MD c) $\frac{3}{2}$ MD d) 4MD

30) If ABC is a right-angled triangle at B and D is the midpoint of $\overline{AC}$, then BD =

- a) AC b) $\frac{1}{2}$ BC c) $\frac{1}{2}$ AC d) AB

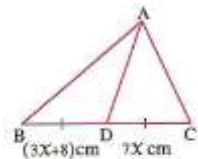
31) If $\overline{AD}$ is a median of triangle ABC, it has a length of 9cm, and M is the centroid of the triangle, then DM=.....cm.

- a) 3 b) 4.5 c) 6 d) 9

32) In The given figure:

$\overline{AD}$ is a median of triangle ABC What is the length of $\overline{BC}$?

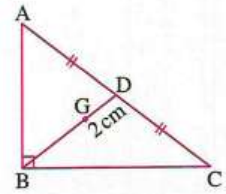
- a) 3 cm c) 6cm
C) 14 cm d) 28 cm



33) In The given figure:

If G is the centroid of the triangle ABC , Which is right-angled

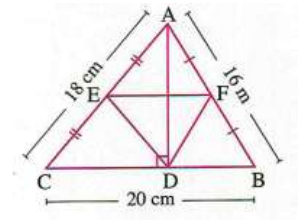
$GD = 2\text{cm}$ What is the length of $\overline{AC}$?



- a) 8cm b) 12cm c) 18cm d) 24cm

34) In the given figure:

The perimeter of $\triangle FDE = \dots\dots\text{cm}$.

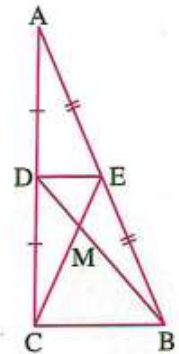


- a) 37 b) 18 c) 54 d) 27

35) In the given figure :

If $BD = 18\text{ cm}$, $EC = 15\text{ cm}$, and $BC = 12\text{ cm}$,

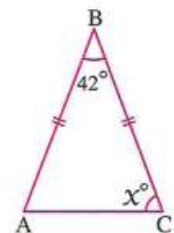
then the perimeter of the triangle $EMD = \dots\dots\dots\text{ cm}$



- a) 15 b) 17 c) 22.5 d) 45

36) In the given figure:

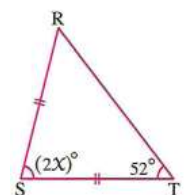
What is the value of x ?



- a) 42 b) 21 c) 69 d) 84

37) In the given figure:

What is the value of x ?

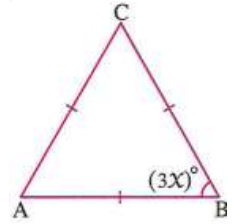


- a) 26 b) 52 c) 76 d) 38

38) In the given figure:

What is the value of x ?

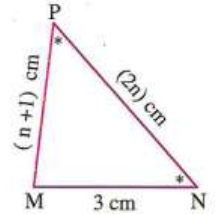
- a) 10 b) 20 c) 30 d) 60



39) In the given figure:

What is the length of $\overline{PN}$?

- a) 8 cm b) 3 cm c) 6 cm d) 4 cm



40) In $\triangle XYZ$, if $XY = YZ = XZ$, What is the measure of X ?

- a) 30° b) 60° c) 90° d) 180°

41) In $\triangle ABC$, $AB = AC$, $m(\angle C) = 65^\circ$, what is the measure of $\angle A$?

- a) 30° b) 50° c) 55° d) 130°

42) What is the measure of the exterior angle of an equilateral triangle?

- a) 30° b) 60° c) 90° d) 120°

43) In $\triangle DEF$, $DE = EF$, $m(\angle E) = 70^\circ$, what is the measure of $\angle F$?

- a) 20° b) 35° c) 55° d) 70°

44) In $\triangle XYZ$, $ZY = ZX$, $m(\angle Z) = 120^\circ$, what is the measure of $\angle X$?

- a) 30° b) 60° c) 90° d) 120°

45) If ABC is a right-angled triangle at A , $AB = AC$,

What is the measure of $\angle B$?

- a) 30° b) 60° c) 90° d) 45°

46) XYZ is an isosceles triangle in which $m(\angle Y) = 100^\circ$, What is the measure of $(\angle Z)$?

- a) 100° b) 80° c) 50° d) 40°

47) If the measure of one of the base angles in an isosceles triangle is 30° , then the triangle is

- a) obtuse triangle. c) acute triangle.
C) equilateral triangle. d) right triangle.

48) In $\triangle ABC$, $AB = AC$, $m(\angle A) = 3x^\circ$, $m(\angle B) = 6x^\circ$, what is the value of x ?

- a) 30 b) 12 c) 90 d) 60

49) In $\triangle XYZ$, if $XY = XZ$, then the exterior angle at the vertex Z ?

- a) acute b) obtuse c) right d) reflex

50) If the lengths of two sides of an isosceles triangle are 3 cm, 7 cm, What is the length of the third side ?

- a) 3cm b) 4 cm c) 7 cm d) 10cm

51) In $\triangle ABC$, $AB = AC$, $m(\angle A) = 60^\circ$, if the perimeter of the triangle is 18 cm, what is the length of $\overline{BC}$?

- a) 60 cm b) 18 cm c) 9 cm d) 6cm

52) In $\triangle ABC$, $CA = CB$, $m(\angle C) = m(\angle A)$, what is the measure of $\angle B$?

- a) 45° b) 60° c) 90° d) 120°

53) If C belongs to the axis of symmetry of $\overline{AB}$, What is the value of $AC - BC$?

- a) Zero b) 1 c) 2 d) 4

54) In $\triangle XYZ$, $XY = XZ$, $\overline{XE}$ is the median, $m(\angle YXE) = 30^\circ$ What is the measure of $\angle YXZ$?

- a) 30° b) 60° c) 90° d) 15°

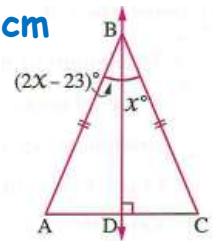
55) In $\triangle LMN$, $LM = LN$, E belongs to MN , $\overline{LE} \perp \overline{MN}$, if $ME = 4$ cm, What is the length of $\overline{MN}$?

- a) 12cm b) 8cm c) 4cm d) 2cm

56) In the given figure:

What is the measure of $\angle C$?

- a) 23° b) 46° c) 60° d) 67°



57) If the measure of one of the angles of a right-angled triangle is 45° , How many axes of symmetry does it have?

- a) Zero b) 1 c) 2 d) 3

58) In $\triangle ABC$, if $m(\angle A) = m(\angle B) \neq 60^\circ$,

How many axes of symmetry does it have?

- a) Zero b) 1 c) 2 d) 3



59) If $\triangle ABC$ has one axis of symmetry , $m(\angle ABC)=120^\circ$,

What is the measure of angle A ?

- a) 60° b) 30° c) 45° d) 120°

60) If the length of any side of a triangle is equal to $\frac{1}{3}$ of the perimeter of the triangle , How many axes of symmetry does this triangle have?

- a) Zero b) 1 c) 2 d) 3

61) ABCD is a quadrilateral in which : $AB = AD, BC = DC$, then $\overleftrightarrow{AC}$ is $\overleftrightarrow{BD}$

- a) Parallel to b) equal to
c) axis of symmetry of d) Coincident to

62) In the square ABCD , $\overleftrightarrow{BD}$ is the axis of symmetry of.....

- a) $\overline{AB}$ b) $\overline{AC}$ c) $\overline{AD}$ d) $\overline{CD}$

63) The length of the side opposite to the angle of measure 30° in a right-angled triangle is equal to the length of the hypotenuse.

- a) half b) twice c) quarter d) one third

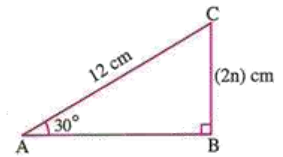
64) In 30° - 60° - 90° triangle, the ratio between the length of the hypotenuse and the length of the side opposite to the angle of measure 30° is equal to

- a) 1 : 2 b) 2 : 1 c) 1 : 1 d) 2 : 3

65) In 30° - 60° - 90° triangle, the ratio between the length of the median drawn from the right angle to the length of the side opposite the angle of measure 30° is equal to

- a) 1 : 2 b) 2 : 1 c) 1 : 1 d) 1 : 3





66) In the given figure: What is the value of n ?

- a) 3 b) 6 c) 9 d) 12

67) Which of the following formulas is used to calculate the number of diagonals in a convex polygon ?

- a) $\frac{3(n-2)}{n}$ b) $\frac{n(n-2)}{3}$ c) $\frac{2(n-3)}{n}$ d) $\frac{n(n-3)}{2}$

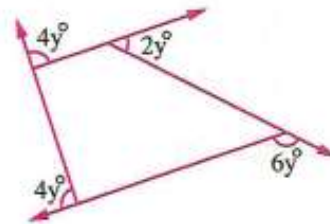
68) What is the sum of the measures of the interior angles of the convex hexagon ?

- a) 900° b) 720° c) 540° d) 360°

69) In the given figure:

What is the value of y ?

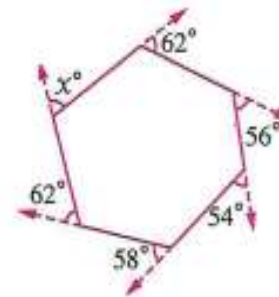
- a) 16 b) 20
c) 21.5 d) 22.5



70) In the given figure:

What is the value of x ?

- a) 58 b) 62
c) 68 d) 72



71) What is the measure of the interior angle of a regular polygon with 18 sides ?

- a) 160° b) 135° c) 144° d) 150°

72) How many sides does a regular polygon have if the measure of one of its interior angles is 144° ?

- a) 12 b) 10 c) 14 d) 11

73) How many sides does a regular polygon have if the measure of one of its exterior angles is 20° ?

- a) 12 b) 16 c) 14 d) 18

74) How many diagonals does a convex heptagon have?

- a) 7 b) 11 c) 13 d) 14

75) What is the convex polygon that has no diagonals?

- a) The hexagon c) The pentagon
c) The quadrilateral d) The triangle

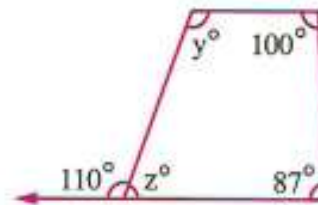
76) What convex polygon has a number of diagonals equal to the number of its sides ?

- a) The hexagon c) The pentagon
c) The quadrilateral d) The heptagon.

77) In the given figure:

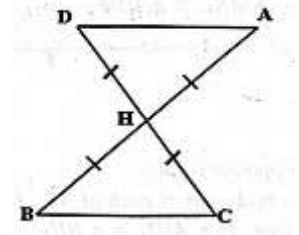
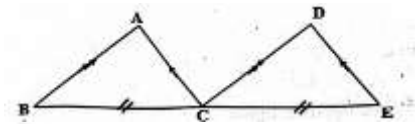
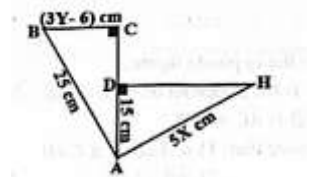
What is the value of y ?

- a) 70° b) 80°
c) 103° d) 93°



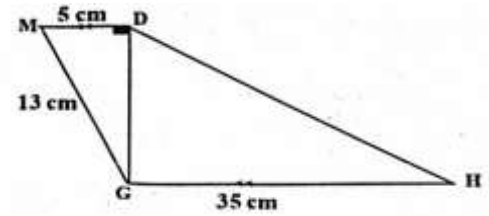
78) If a regular convex polygon has 14 diagonals and a perimeter of 35 cm ,
What is the length of its side?

- a) 21 cm b) 14 cm c) 7 cm d) 5 cm

Q2 Answer the following :-**1) In the opposite figure: H is the midpoint of each of AB, CD** **1. Prove that $\triangle AHD \cong \triangle BHC$** **2. Prove that $AD \parallel BC$** **2) In the opposite figure: , $AC \parallel DE$, $AB \parallel DC$, $BC = CE$** **Prove that $\triangle ABC \cong \triangle DCE$** **3) In the opposite figure : $\triangle ABC \cong \triangle HAD$** **Find the value of $X + Y$** 

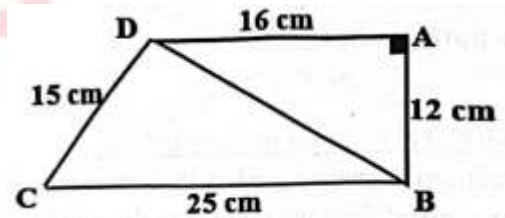
- 4) In the opposite figure : $MD \parallel HG$

Find the perimeter of the polygon MDHG



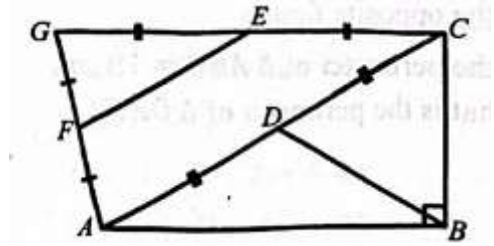
- 5) In the opposite figure: $ABCD$ is a quadrilateral $m(\angle A)90^\circ$

Prove that $m(\angle CDB)90^\circ$



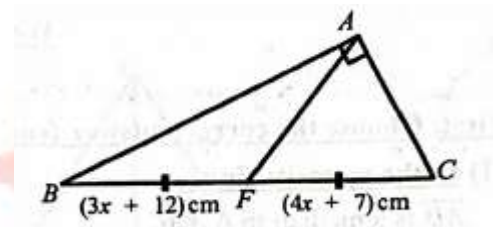
6) In the opposite figure :

BD is a median of triangle ABC , $m(\angle B) = 90^\circ$,
E is the midpoint of GC , F is the midpoint of GA
, AC = 16 cm , find the length of BD and EF



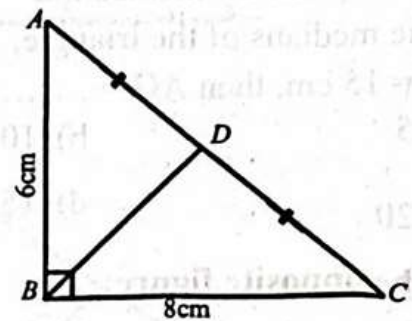
7) In the opposite figure :

ABC is a right-angled triangle at A ,
AF is a median , find the length of AF.



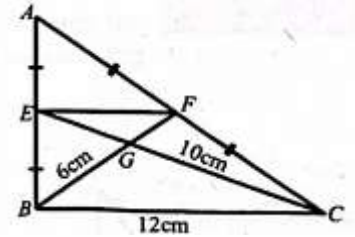
8) In the opposite figure :

ABC is a right-angled triangle at B ,
BD is a median , find the length of BD.



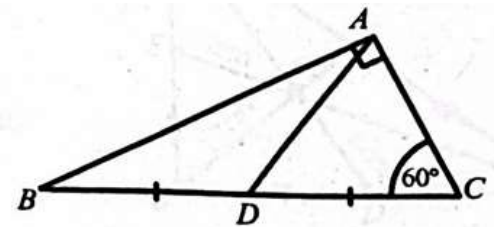
9) In the opposite figure:

If E and F are the midpoints of AB and AC respectively
 $CG = 10 \text{ cm}$, $BC = 12 \text{ cm}$ $GB = 6 \text{ cm}$,
 Find the perimeter of $\triangle EFG$



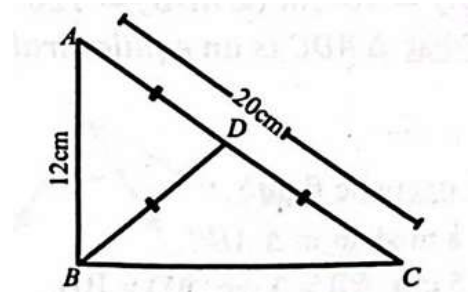
10) In the opposite figure:

AD is a median in $\triangle ABC$, $m(\angle A) = 90^\circ$, $m(\angle C) = 60^\circ$
 Prove that $\triangle ADC$ is an equilateral triangle



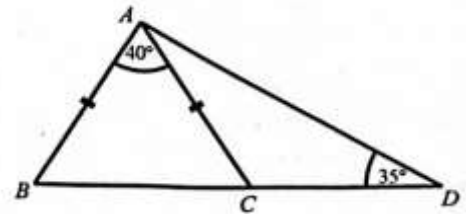
11) In the opposite figure:

BD is a median in $\triangle ABC$
 $AC = 20 \text{ cm}$, $AB = 12 \text{ cm}$ $BD = AD$,
 Prove that $\triangle ABC$ is a right-angled triangle
 Then find the area of $\triangle ABC$



12) In the opposite figure:

Prove that $\triangle ACD$ is an isosceles triangle

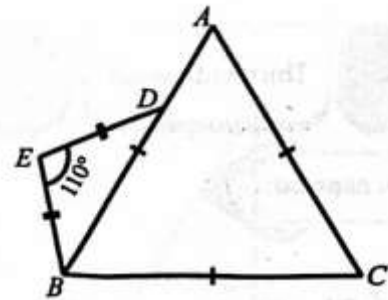


13) In the opposite figure:

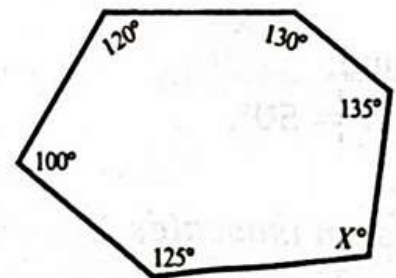
$\triangle ABC$ is an equilateral triangle

$m(\angle E) = 110^\circ$, $EB = ED$

Find $m(\angle EBC)$

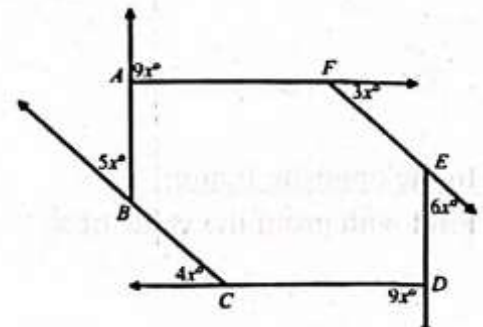


14) Find the number of sides of the convex polygon whose sum of its interior angles is 540°



15) In the opposite figure:

Find the value of X



16) In the opposite figure:

Find $m(\angle BCD)$

17) Find the number of sides of regular polygon whose interior angle is 144°

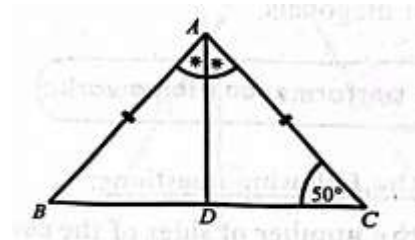
18) Find the number of sides of the convex polygon that has 20 diagonals

19) In the opposite figure:

$AB = AC$, $m(\angle C) = 50^\circ$

AD bisects $(\angle A)$

Find with proof $m(\angle CAD)$

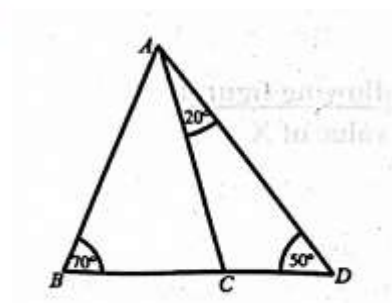


20) In the opposite figure:

$m(\angle B) = 70^\circ$, , $m(\angle D) = 50^\circ$

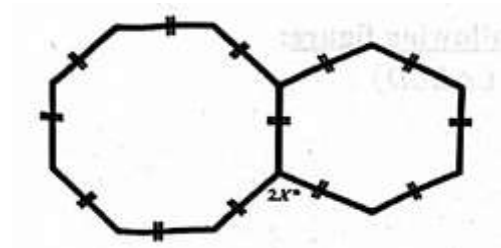
, $m(\angle CAD) = 20^\circ$

Prove that $\triangle ABC$ is an isosceles triangle



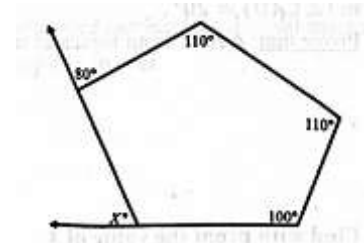
21) In the opposite figure:

Find the value of X



22) In the opposite figure:

Find the value of X



Unit 4

Q1 Answer the following :-

1) The opposite table represents the ascending cumulative frequency table for the marks of 40 students in prep two:

Upper of sets	ascending cumulative frequency
Less than 10	0
Less than 20	5
Less than 30	14
Less than 40	24
Less than 50	36
Less than 60	40

(a) The number of students who obtains marks less than 40 marks equals students

- a) 43 b) 36 c) 4 d) 24

(b) The number of students who obtains marks less than 60 marks equals students

- a) 0 b) 40 c) 36 d) 60

2) The following table shows the frequency distribution for the daily studying hours for a set of students:

Sets	1-	2-	3-		5-	sum
Number of workers	5	8	12	9	6	

From the previous table, answer the following:

- 1- Complete the table
- 2- Form the ascending cumulative frequency table
- 3- Represent the data using the ascending cumulative frequency curve

3) The given steam and leaf plot represents the ages of the parents who attended the school parent's meeting they were 24 parents.

a- Draw the ascending cumulative frequency curve

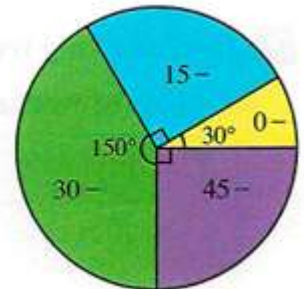
b- What is the percentage of parents whose ages are under 40 years ?

Stem	Leaves
2	5 7 9
3	2 5 6 7 7 7
4	1 2 4 6 6 7 7 8 8
5	0 1 1 4 5 6

Key 3/2 means 32 years

4) The given pie chart illustrates the marks of students , if the number of the students is 120

Form the ascending cumulative frequency table and represent it .



5) The following table shows the frequency distribution for the marks of 100 students in a math exam:

Marks	10 -	20 -	30 -	40 -	50 -
Frequency	10	20	30	24	16

From the previous table, answer the following (without solving):

1. Estimate the arithmetic mean.
2. Form the ascending cumulative frequency table and represent it graphically, then find the median.
3. Represent the data using a histogram, then find the mode

6) The following frequency table shows the marks of 150 students

Marks	4 –	12 –	20 –	28 –	36 –	44 –	52 –	The sum
Frequency	15	3 k	4 k	32	25	22	14	150

(a) What is the value of K ?

a) 5

b) 4

c) 6

d) 7

(b) What is the order of the median ?

a) 37.5

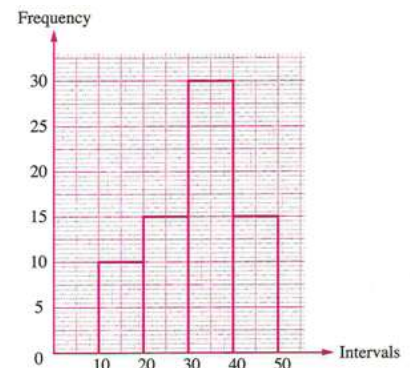
b) 75

c) 112.5

d) 150

Q2 Choose the correct answer :-

- 1) If $\Sigma f = 20$ and $\Sigma(f \cdot x_m) = 100$ then the arithmetic mean $\bar{X} = \dots\dots\dots$
- a) 120 b) 80 c) 50 d) 5
- 2) What is the center of the second interval of the intervals 5-, 15-, 25-, 35-?
- a) 5 b) 10 c) 15 d) 20
- 3) If the upper limit of an interval is 18 and the center is 15.5 what is the lower limit of an interval ?
- a) 12 b) 13.5 c) 12.5 d) 13
- 4) If the lower limit of an interval is 5 and the center is 7.5 then the length of the interval is
- a) 5 b) 7.5 c) 10 d) 12.5
- 5) If the arithmetic mean of a frequency distribution is 39.4 and the total of the frequencies is 100 , then the sum of the products of the frequency of each interval and its center =
- a) 60.6 b) 139.4 c) 0.394 d) 3,940
- 6) If the projection of the point (35 , 5) on the ascending cumulative frequency curve along the intervals axis determines the median , what is the order of the median ?
- a) 5 b) 10 c) 35 d) 70
- 7) If the projection of the point (23 , 30) on the ascending cumulative frequency curve along the intervals axis determines the median , what is the value of the median ?
- a) 23 b) 30 c) 60 d) 46
- 8) In the opposite graph what is the value of mode ?
- a) 30 b) 40 c) 35 d) 45



Answers

Unit 1

Q1 Choose the correct answer:-1) $R = \dots\dots\dots$

a) $Q \cup Q'$

b) $Q \cap Q'$

c) $N \cup Z$

d) $Z \cup Q'$

2) Which of the following numbers is an irrational number ?

a) 0.3

b) $\sqrt{\frac{9}{25}}$

c) $\sqrt{5}$

d) $\sqrt[3]{-125}$

3) If $X \in Z$, $X < \sqrt{29} < X+1$, what is the value of X ?

a) 4

b) 5

c) 6

d) 7

4) Estimating $\sqrt{41}$ to the closest integer is

a) 6

b) 7

c) 36

d) 49

5) Estimating $\sqrt[3]{25}$ to closest integer is

a) 2

b) 3

c) 5

d) 12.5

6) Which of the following numbers is an irrational number that lies between -1 and -2 ?

a) -3

b) $-1\frac{1}{2}$

c) $-\sqrt{3}$

d) $\sqrt{2}$

7) The side length of a square with an area of 6 cm^2 is.....

a) a natural number

b) an integer.

c) a rational number.

d) an irrational number.

8) What is the solution set of the equation : $X^2 + 1 = 0$ in R ?

a) $\{-1\}$

b) $\{1, -1\}$

c) $\{1\}$

d) $\emptyset$



9) If X is a negative real number, which of the following numbers is positive?

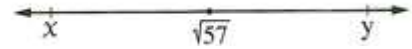
a) X^2

b) X^3

c) $2X$

d) $\frac{x}{2}$

10) If X and Y are two consecutive integers, what is the value of $X+Y$?



a) 11

b) 13

c) 15

d) 17

For more steps
watch 

11) $R =$

a) $R^+ \cap R^-$

b) $R^+ \cup R^-$

c) $]-\infty, \infty[$

d) $Q \cap Q'$

12) $R^+ =$

a) $]0, \infty[$

b) $]-\infty, 0[$

c) $[0, \infty[$

d) $]-\infty, 0]$

13) $R^- =$

a) $]0, \infty[$

b) $]-\infty, 0]$

c) $[0, \infty[$

d) $]-\infty, 0]$

14) The set of non-negative real numbers.....

a) $]0, \infty[$

b) $]-\infty, 0[$

c) $]0, \infty[$

d) $]-\infty, 0]$

15) The set of non-positive real numbers is.....

a) $]0, \infty[$

b) $]-\infty, 0[$

c) $[0, \infty[$

d) $]-\infty, 0]$

16) $|-4|$ $[3, \infty[$

a) $\in$

b) $\notin$

c) $\subset$

d) $\not\subset$



17) If $a \in]2, 5[$, which of the following can be the value of a ?

a) 1

b) 2

c) 4

d) 5

18) If $a \notin]-1, 3]$, which of the following can be the value of a ?

a) -1

b) 0

c) 2

d) 3

19) $\sqrt[3]{-125} \dots \dots \dots]-\sqrt{25}, \sqrt{25}]$

a) $\in$ b) $\notin$ c) $\subset$ d) $\not\subset$

20) $\mathbb{Z}^+ \dots \dots \dots]0, \infty[$

a) $\in$ b) $\notin$ c) $\subset$ d) $\not\subset$

21) $[-3, 6] -]6, 8[= \dots \dots \dots$

a) $\emptyset$ b) $[-3, 6]$ c) $[-3, 6[$ d) $] -3, 6[$

22) $[-4, 1] \cap [0, 1] = \dots \dots \dots$

a) $\{1\}$ b) $] -4, 1]$ c) $[0, 1]$ d) $[0, 1[$

23) $] -\infty, 2[\cap [0, \infty [= \dots \dots \dots$

a) $[0, 2]$ b) $[0, 2]$ c) $\mathbb{R}$ d) $\emptyset$

24) What is the interval resulting from $]2, 5[\cup \{2\}$?

a) $]2, 5[$ b) $[2, 5]$ c) $]2, 5]$ d) $[2, 5]$

25) Which of following interval does $-\sqrt{7}$ belong to?

a) $[-2, -1]$ b) $[-3, -2]$ c) $[-4, -3]$ d) $[-7, -6]$

For more steps
watch 

26) $\mathbb{R} - \mathbb{R}^- = \dots\dots\dots$

- a) $\mathbb{R}^+$ b) $]-\infty, 0]$ c) $[0, \infty[$ d) $]-\infty, 0[$

27) What is the sum of all real number in the interval $[-75, 75]$?

- a) -75 b) 75 c) 150 d) 0

28) What is the sum of all real number in the interval $[-75, 75[$?

- a) -75 b) 75 c) 150 d) 0

29) $\{3\} \cap [3, 6] = \dots\dots\dots$

- a) $\emptyset$ b) $\{3\}$ c) $[3, 6]$ d) $\{6\}$

30) $\{8, 9, 10\} -]8, 10[= \dots\dots\dots$

- a) $\emptyset$ b) $\{8, 10\}$ c) $\{9\}$ d) $\mathbb{N}$

31) If $X \in [-3, 4]$, then $X^2 \in \dots\dots\dots$

- a) $[9, 16]$ b) $[0, 9]$ c) $[0, 16]$ d) $[-9, 0]$

32) If $a + \sqrt{5} = 0$, what is the value of a ?

- a) 0 b) $\sqrt{5}$ c) $-\sqrt{5}$ d) $\frac{1}{\sqrt{5}}$

33) If $a \times \sqrt{2} = 1$, what is the value of a ?

- a) 1 b) $\sqrt{2}$ c) $-\sqrt{2}$ d) $\frac{\sqrt{2}}{2}$

34) If $a\sqrt{5} - 4\sqrt{5} = 3\sqrt{5}$, then

- a) $a = -1$ b) $a = 1$ c) $a = 7$ d) $a = 10$

35) If $(2\sqrt{3})^n = 12$, then

- a) $n = 2$ b) $n = 3$ c) $n = 4$ d) $n = 6$



36) If $x = \sqrt{2} + 10$, $y = \sqrt{2} - 10$, what is the value of $(x + y)^2$?

- a) 4 b) 6 c) 8 d) $4\sqrt{2}$

37) If $\sqrt[3]{5} + 3a = 4\sqrt[3]{5}$, then

- a) $a = 1$ b) $a = \sqrt{5}$ c) $a = \sqrt[3]{5}$ d) $a = 5$

38) What is the additive inverse of the number $\frac{7}{\sqrt{7}}$ in its simplest form?

- a) $\frac{\sqrt{7}}{7}$ b) 7 c) $-\sqrt{7}$ d) -7

39) What is the multiplicative inverse of the number $\sqrt{5}$ in its simplest form?

- a) -5 b) $\frac{-1}{5}$ c) $\frac{5}{\sqrt{5}}$ d) $\frac{\sqrt{5}}{5}$

40) What is the multiplicative inverse of the number $\sqrt{3} - 2$?

- a) $2 - \sqrt{3}$ b) $\sqrt{3} + 2$ c) $-\sqrt{3} - 2$ d) $\sqrt{3} - 2$

41) If $\frac{x}{3\sqrt{2}} = \frac{y}{2\sqrt{5}} = 1$, then $x^2 + y^2 =$

- a) 36 b) 38 c) 42 d) 45

For more steps
watch 

42) What is the value of: $\sqrt{18} + \sqrt{32}$?

- a) $\sqrt{50}$ b) $7\sqrt{2}$ c) $7\sqrt{4}$ d) $5\sqrt{4}$

43) What is the multiplicative inverse of the number $\sqrt{50}$?

- a) $\frac{\sqrt{2}}{10}$ b) $\frac{-\sqrt{2}}{10}$ c) $-5\sqrt{2}$ d) $5\sqrt{2}$

44) If $a\sqrt[3]{2} = \sqrt[3]{3} \times \sqrt[3]{10}$, what is the value of a ?

- a) 30 b) $\sqrt[3]{30}$ c) 15 d) $\sqrt[3]{15}$



45) If $2\sqrt{3} \times 4a = 8\sqrt{6}$, what is the value of a ?

a) $\sqrt{2}$

b) $\sqrt{3}$

c) 2

d) $\sqrt{6}$

46) If $\frac{\sqrt{3}}{\sqrt{a}} = \frac{\sqrt{2}}{\sqrt{6}}$, what is the value of a ?

a) $\sqrt{3}$

b) $\sqrt{6}$

c) 3

d) 9

47) If $x + \sqrt{28} = \sqrt{7}$, what is the value of x ?

a) $\sqrt{21}$

b) $-\sqrt{21}$

c) $\sqrt{7}$

d) $-\sqrt{7}$

48) If $x = \frac{\sqrt{6}}{\sqrt{2}}$, what is the value of $\frac{1}{x}$?

a) $\sqrt{3}$

b) $\frac{\sqrt{3}}{2}$

c) $\frac{\sqrt{3}}{3}$

d) $2\sqrt{3}$

49) What is the next number in this pattern? $\sqrt{5}, \sqrt{20}, \sqrt{45}, \sqrt{80}, \dots$

a) $2\sqrt{5}$

b) $\sqrt{100}$

c) $\sqrt{120}$

d) $5\sqrt{5}$

50) $\sqrt[3]{3} \times \sqrt[3]{9} = \sqrt{\dots}$

a) 27

b) 3

c) 9

d) 18

51) What is the result of $5^2 + 5^2$?

a) 10^2

b) 10^4

c) 5^4

d) 50

52) What is the result of $3^5 \times 2^5$?

a) 5^{10}

b) 6^{10}

c) 6^5

d) 6^{25}

53) What is the value of $3x^0$? where $x \neq 0$

a) 0

b) 1

c) 3

d) $3x$



54) What is the result of $\frac{(ab)^3}{b^3}$?

a) a^3

b) $\frac{a}{b}$

c) $\frac{a^3}{b^2}$

d) $\frac{a^2}{b^3}$

For more steps
watch 

55) What is the quarter of the number 4^{20} ?

a) 1^{10}

b) 4^{19}

c) 4^{16}

d) 4^5

56) What is four times the number 2^8 ?

a) 2^{32}

b) 8^8

c) 2^{10}

d) 4^8

57) What is the sixth of the number $2^{12} \times 3^{12}$?

a) 6^2

b) 6^4

c) 6^{12}

d) 6^{23}

58) $x^{m-1} \times \dots = 1, x \neq 0$

a) x^{m-1}

b) x^{-m-1}

c) x^{m+1}

d) x^{-m+1}

59) What is the perimeter of a square with an area of $a \text{ cm}^2$?

a) $a^4 \text{ cm}$

b) $(\sqrt{a})^4 \text{ cm}$

c) $4\sqrt{a} \text{ cm}$

d) $4a \text{ cm}$

60) What is the value of $4^2 + 4^2 + 4^2 + 4^2$?

a) 4^2

b) 4^3

c) 4^8

d) 4^{16}

61) If $2^{x-1} = 1$, what is the value of x ?

a) 0

b) 1

c) -1

d) -2



For more steps
watch 

62) If $\sqrt{6} \times (\sqrt{6})^x = 1$, what is the value of x ?

a) 0

b) 1

c) -1

d) -2

63) What is the $\frac{1}{5}$ of the number $(\sqrt[3]{5})^6$?

a) 5

b) 25

c) $\sqrt[3]{5}$ d) $(\sqrt[3]{5})^8$

64) If $2^x = 3$, what is the value of 2^{x+1} ?

a) 4

b) 5

c) 6

d) 9

65) What is the value of: $\frac{2^{2n+1} \times 5^{2n+1}}{(10)^{2n}}$?

a) $\frac{1}{10}$

b) 7

c) 10

d) 100

66) What is the value of $3^x + 3^x + 3^x$?

a) 3^{3x} b) 3^{x+1} c) 9^x d) 9^{3x}

67) What is the value of $(\sqrt{2})^{10} + 2^5$?

a) 2^6 b) 2^{10} c) 2^{15} d) 2^{50}

68) What is the quarter of 2^{14} ?

a) 2^{12} b) 2^8 c) 2^{10} d) 4^8

69) If $x = \frac{\sqrt{9}}{\sqrt{3}}$, what is the value of x^{-1} ?

a) $\frac{\sqrt{3}}{3}$ b) $\frac{\sqrt{9}}{\sqrt{2}}$ c) $\sqrt{3}$

d) 2



Q2 Complete the following :-

For more steps
watch 

1) $\mathbb{R} \cap [2, 5[= [2, 5[=$

2) $\mathbb{R}^- \cup \mathbb{R}^+ = \mathbb{R} - \{0\}$

Q3 Answer the following :-

1) The solution set in $\mathbb{Q}$ of the equation $X^2 - 5 = 2$

$$X^2 - 5 = 2$$

$$X^2 = 2 + 5 = 7$$

$$X = \pm\sqrt{7}$$

$$\text{S.S} = \emptyset$$

2) The solution set in $\mathbb{Q}^{\setminus}$ of the equation $X^3 - 11 = 28$

$$X^3 - 11 = 28$$

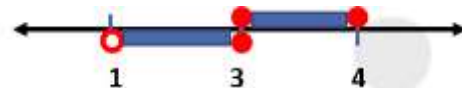
$$X^3 = 28 + 11 = 39$$

$$X = \sqrt[3]{39}$$

$$\text{S.S} = \{\sqrt[3]{39}\}$$

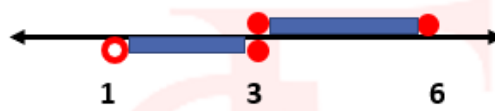
3) Using the number line represent the two intervals $X = [3, 4]$, $Y =]1, 3]$

then find $X \cup Y =]1, 4]$



4) Using the number line represent the two intervals $X = [3, 6]$, $Y =]1, 3]$

then find $X \cap Y = \{3\}$



5) If $A = [-1, 3]$, $B =]-\infty, 3[$, find :

- $A \cup B =]-\infty, 3]$
- $A \cap B = [-1, 3[$
- $A - B = \{3\}$
- $B - A =]-\infty, -1[$

For more steps
watch 

6) Find in the simplest form :-

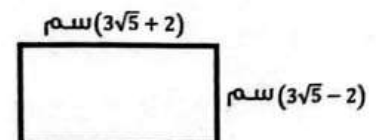
- a) $(\sqrt{8} - 3)(\sqrt{8} + 3) = -1$
- b) $(\sqrt{5} - 1)^2 + (\sqrt{5} - 2)(\sqrt{5} + 2) = 7 - 2\sqrt{5}$
- c) $(\sqrt{3} - 2)^2 = 7 - 4\sqrt{3}$

7) Make the denominator an integer

- a) $\frac{10}{2\sqrt{5}} = \sqrt{5}$
- b) $\frac{10}{5 - \sqrt{15}} = 5 + \sqrt{15}$

9) Find the area of the opposite rectangle .

$$(3\sqrt{5} + 2)(3\sqrt{5} - 2) = 41\text{cm}^2$$



10) Find the result in the simplest form :

a) $\sqrt[3]{3} + \sqrt[3]{3} = 2\sqrt[3]{3}$

b) $2\sqrt{3} + 5\sqrt{27} - 4\sqrt{48} = \sqrt{3}$

c) $\sqrt[3]{24} + \sqrt[3]{3} - 2\sqrt[3]{81} = -3\sqrt[3]{3}$

d) $2\sqrt[3]{\frac{1}{4}} + \sqrt[3]{16} = 3\sqrt[3]{2}$

e) $\frac{(\sqrt{3})^6 \times (\sqrt{3})^4}{(\sqrt{3})^5 \times (\sqrt{3})^3} = 3$

f) $\frac{(-2xy)^{-3}}{x^{-4} \times y^{-3}} = \frac{-x}{8}$

For more steps
watch 

11) If $X = (\sqrt{5} - 2)$, $Y = (\sqrt{5} + 2)$, find

a) $X Y = (\sqrt{5} - 2)(\sqrt{5} + 2) = 1$

b) $X + Y = (\sqrt{5} - 2) + (\sqrt{5} + 2) = 2\sqrt{5}$

12) If the area of a square is 144 cm^2 , find its diagonal.

Diagonal = $\sqrt{2} \text{ cm}$



Answers

Unit 2

Q1 Answer the following :-1) Factorize the following completely :-

$$1) 2X^2 - 16X + 30 = 2(x - 3)(x - 5)$$

$$2) (X + 4)^2 + 3(X + 4)$$

$$(X + 4)(X + 4 + 3)$$

$$(X + 4)(X + 7)$$

$$3) -X^2 + 3X + 10 = -(x - 5)(x + 2)$$

$$4) (x + 4)(x + 3) - 6 = (x + 1)(x + 6)$$

$$5) 3X^2 - 11X + 6 = (x - 3)(3x - 2)$$

$$6) X^2 + 14X + 49 = (x + 7)^2$$

$$7) 4X^2 - 25 = (2x - 5)(2x + 5)$$

$$8) 8X^3 + 125 = (2x + 5)(x^2 - 10x + 25)$$

$$9) a^2 b^2 - 4 = (ab - 2)(ab + 2)$$

$$10) x^2 + 2x + xy + 2y = x(x + 2) + y(x + 2)$$

$$= (x + 2)(x + y)$$

$$11) 4x^4 + 1 = (4x^4 + 4x^2 + 1) - 4x^2$$

$$= (2x^2 + 1)^2 - 4x^2$$

$$= (2x^2 + 1 + 2x)(2x^2 + 1 - 2x)$$

$$12) X^4 - 19X^2 Y^2 + 9Y^4$$

$$X^4 - 19X^2 Y^2 + 9Y^4$$

$$(X^4 + 6X^2 Y^2 + 9Y^4) - 6X^2 Y^2 - 19X^2 Y^2$$

$$(X^2 + 3Y^2)^2 - 25X^2 Y^2$$

$$(X^2 + 3Y^2 - 5XY)(X^2 + 3Y^2 + 5XY)$$

2) Factorize :-

1) $y(y - 2) - (y - 2)$

$$(y - 2)(y - 1)$$

2) $X(a - b) - y(b - a)$

$$X(a - b) - y(-a + b)$$

$$X(a - b) + y(a - b)$$

$$(X + y)(a - b)$$

3) $(X + y)^3 - 4(X + y)$

$$(X + y)[(X + y)^2 - 4]$$

$$(X + y)(X + y - 2)(X + y + 2)$$

3) Find the numerical value of each of the following using factorization by taking out the greatest common factor :-

a) $6 \times \frac{5}{7} + 2 \times \frac{5}{7} - \frac{5}{7}$

$$= \frac{5}{7}(6 + 2 - 1) = \frac{5}{7} \times 7 = 5$$

b) $45 \times 55 + 45 \times 46 - 45$

$$45 \times (55 + 46 - 1)$$

$$45 \times 100 = 4500$$

4) Find the solution set of each of the following in $\mathbb{R}$:-

a) $10y^2 - 30y = 0$ **S.S = {0, 3}**

b) $14x + x^2 - 32 = 0$

$= (x - 2)(x + 16)$ S.S = {-16, 2}

c) $x^3 = 49x$

$= x(x - 7)(x + 7)$

S.S = {-7, 0, 7}

d) $x^2 + 7x - 60 = 0$

$(x + 12)(x - 5)$

S.S = {-12, 5}

Q2 Choose the correct answer:-

- 1) what is the greatest common factor between the terms of the polynomial $12x^2 - 8x$
- a) 2 b) 4 c) $2x$ d) $4x$
- 2) $49ab + 14b^2 = 7b(\dots\dots\dots + \dots\dots\dots)$
- a) $7b + 2a$ b) $7a + 2b$ c) $42a + 7b$ d) $14ab$
- 3) $-9x^2 - 18y^2 = -9(\dots\dots\dots + \dots\dots\dots)$
- a) $x^2 + 2y^2$ b) $x^2 - 2y^2$ c) $2x^2 + y^2$ d) $x^2 - 9y^2$
- 4) $33m^2n + 44mn^2 = \dots\dots\dots(3m + 4n)$
- a) $11m^2n^2$ b) $11m + n$ c) $11nm^2$ d) $11mn$
- 5) $x(a + b) + y(a + b) = \dots\dots\dots$
- a) $(x - y)(a - b)$ b) $(x + y)(a + b)$
c) $(x - y)(a + b)$ d) $(x + y)(a - b)$
- 6) If $x + 2y = 7$, then what is the value of $2x + 4y$?
- a) 14 b) 28 c) 18 d) 56
- 7) If $3x + 3y = 18$, then what is the value of $x + y$?
- a) 54 b) 15 c) 6 d) 2
- 8) Which of the following represents the factorization of the polynomial $5x - 6 - x^2$?
- a) $(x - 2)(x - 3)$ b) $(x + 2)(x + 3)$
c) $-(x + 2)(x + 3)$ d) $-(x - 2)(x - 3)$

- 9) If $(x + 3)$ is one of the factors of the trinomial $(x^2 - x - 12)$, then what is the other factor?
- a) $x + 2$ b) $x - 2$ c) $x + 4$ d) $x - 4$
- 10) If $x + 4y = 8$, $x - 3y = 5$, what is the numerical value of polynomial $(x^2 + xy - 12y^2)$?
- a) 13 b) 40 c) $\frac{8}{5}$ d) 3
- 11) If $a + 5b = 10$, $30b^2 + a^2 + 11ab = 20$, what is the numerical value of the polynomial $(6b + a)$?
- a) 2 b) 10 c) 200 d) 30
- 12) If $x^2 - 11x + 28 = (x - a)(x - b)$, what is the value of $a + b$?
- a) -16 b) -11 c) 11 d) 16
- 13) If $x^2 + ax + 15 = (x + 3)(x + b)$, what is the value of ab ?
- a) 5 b) 8 c) 13 d) 40
- 14) If $x^2 - kx + 18$ is factorizable, then k can be equal to
- a) 10 b) 12 c) -12 d) -11
- 15) If $x^2 + bx - 14$ is factorizable, then b can be equal to
- a) -15 b) 15 c) -5 d) 14
- 16) If $(x - 5)$ is one of the factors of the trinomial $(2x^2 - 7x - 15)$, what is the other factor?
- a) $x + 3$ b) $2x - 3$ c) $2x + 3$ d) $x - 3$
- 17) If $3x - 2y = 6$, $2x + 3y = 5$, what is the numerical value of the polynomial $(6x^2 + 5xy - 6y^2)$?
- a) 10 b) 11 c) 12 d) 30
- 18) Which of the following trinomials represent a perfect square?
- a) $x^2 + 25 + 5x$ b) $25 - 10x - x^2$
c) $\frac{1}{9}x^2 + 2xy + 9y^2$ d) $4x^2 + 12xy - 9y^2$

- 19) If the polynomial $(4x^2 + kx + 1)$ is a perfect square trinomial, what is the value of k ?
a) ± 1 b) ± 2 c) ± 4 d) ± 8
- 20) If the polynomial $(16x^2 - 40x + k^2)$ is a perfect square, what is the value of k ?
a) 5 b) -5 c) ± 5 d) 8
- 21) If $x = \sqrt{5} + \sqrt{2}$, $y = \sqrt{5} - \sqrt{2}$, what is the numerical value of the polynomial $(x^2 + 2xy + y^2)$?
a) 8 b) 20 c) $2\sqrt{5}$ d) 10
- 22) If $a^2 + 2ab + b^2 = 36$, what is the value of $a + b$?
a) 6 b) -6 c) ± 6 d) 18
- 23) A square has an area of $(9x^4 + 30x^2 + 25) \text{ cm}^2$, what is the length of its side in terms of x ?
a) $(3x + 5) \text{ cm}$ b) $(5x + 3) \text{ cm}$
b) $(3x^2 - 5) \text{ cm}$ c) $(3x^2 + 5) \text{ cm}$
- 24) If $x^2 - b^2 = (x - 3)(x + 3)$, what is the value of b ?
a) ± 1 b) ± 3 c) ± 6 d) ± 9
- 25) If $x^2 - 100 = k(x + 10)$, which of the following is equal to k ?
a) $x - 50$ b) $x + 10$ c) $x - 10$ d) $10x$
- 26) If $x^2 + \ell - 25 = (x - 5)(x + 5)$, what is the value of ℓ ?
a) zero b) 10 c) -10 d) 25
- 27) If $x + y = 10$, $x^2 - y^2 = 20$, what is the value of $y - x$?
a) 10 b) 2 c) -2 d) -10
- 28) If $x^2 - y^2 = 16$, $y - x = 2$, what is the value of $x + y$?
a) 4 b) 8 c) -8 d) 2

29) If $a^2 - b^2 = 45$, $a - b = 5$ what is the value of $\sqrt{a + b}$?

- a) 9 b) 3 c) -3 d) ± 3

32) If $3(a - b)(a + b) = 18$, what is the value of $a^2 - b^2$?

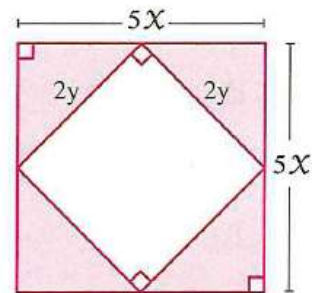
- a) 2 b) 6 c) 9 d) 18

30) If $(25)^2 - (15)^2 = 10x$, what is the value of x ?

- a) 40 b) 30 c) 20 d) 10

31) Which of the following statements represents the area of the colored region in the given figure?

- a) $5x^2 - 2y^2$ b) $25x - 4y$
b) $(5x - 2y)^2$ d) $(5x - 2y)(5x + 2y)$



32) If $x^3 - 8 = (x + a)(x^2 + 2x + 4)$, what is the value of a ?

- a) 4 b) -4 c) 2 d) -2

33) If $x^3 + 27 = (x + 3)(x^2 + kx + 9)$, what is the value of k ?

- a) $-6x$ b) $-3x$ c) $3x$ d) $6x$

34) If $(4a^2 - 2a + 1)$ is one of the factors of the expression $(8a^3 + 1)$, what is the other factor?

- a) $a + 2$ b) $2a + 1$ c) $2a - 1$ d) $4a + 1$

35) If $x^2 - xy + y^2 = 5$, $x + y = 3$, what is the value of $x^3 + y^3$?

- a) 15 b) 25 c) 8 d) 7

36) $x^2 - ax + bx - ab = \dots\dots\dots$

- a) $(x - a)(x - b)$ b) $(x - a)(x + b)$
b) $(x + a)(x - b)$ d) $(x + a)(x + b)$

37) If $xy + 5x + 7y + 35 = (x + a)(y + b)$, what is the value of $a - b$?

- a) 2 b) -2 c) 12 d) -12

38) If $x^3 + 5x^2 - 4x - 20 = (x + a)(x + b)(x + c)$, what is the value of $a + b + c$?

- a) 2 b) 5 c) 7 d) 9

39) When completing the square for: $(x^2 + 9)$ add

- a) $\pm 3x$ b) $\pm 6x$ c) $\pm 9x$ d) $\pm 12x$

40) When completing the square for: $(x^2 + 12x)$ add

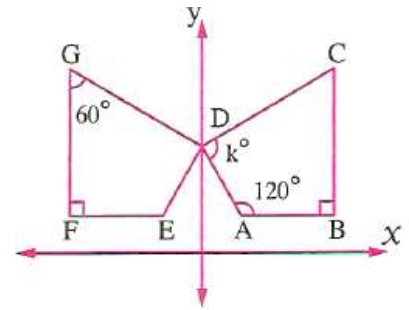
- a) ± 9 b) ± 36 c) 9 d) 36

Unit 3

Q1 Choose the correct answer:-

1) In the given figure:

The polygon EFGD is the image of the polygon ABCD by reflection in the y -axis. What is the value of k?



- a) 90 b) 60 c) 120 d) 70

2) If $\triangle ABC \cong \triangle XYZ$, $m(\angle A) + m(\angle B) = 130^\circ$, what is the measure of $\angle Z$?

- a) 65° b) 50° c) 100° d) 130°

3) If $\triangle ABC \cong \triangle LMN$, $m(\angle C) = 90^\circ$, then $m(\angle L) + m(\angle M) = \dots\dots\dots$

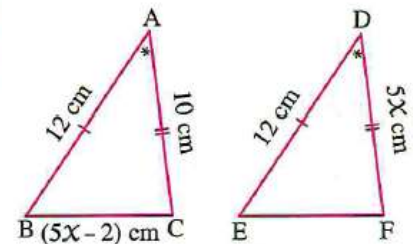
- a) 45° b) 90° c) 180° d) 120°

4) If $\triangle ABC \cong \triangle XYZ$, the perimeter of $\triangle ABC = 12$ cm, $XY = 4$ cm, $YZ = 5$ cm, what is the length $\overline{AC}$?

- a) 3 cm b) 5 cm c) 9 cm d) 12 cm

5) In the given figure : what is the length of $\overline{EF}$?

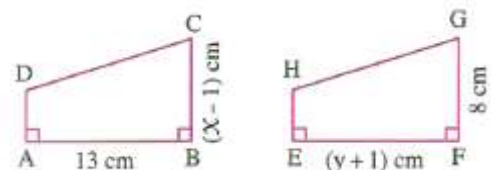
- a) 6 cm b) 8 cm
c) 10 cm d) 12 cm



6) In the given figure:

If the polygon EFGH is the image of the polygon ABCD by a translation, what is the value of $x + y$?

- a) 9 b) 12
c) 21 d) 22



7) In the given figure:

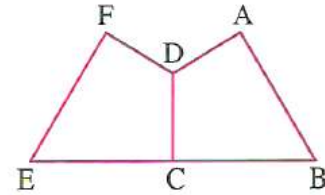
The polygon $ABCD \cong$ the polygon $FECD$

If the perimeter of the polygon

$ABCD = 24\text{ cm}$, $CD = 5\text{ cm}$,

what is the perimeter of shape $ABEFD$?

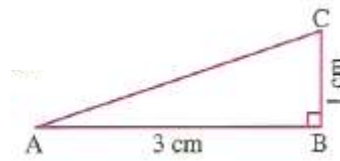
- a) 24 cm b) 38 cm
c) 48 cm d) 52 cm



8) In the given figure:

What is the area of the square drawn on $\overline{AC}$?

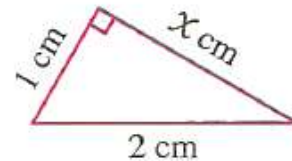
- a) 4 cm^2 b) 2 cm^2
c) 8 cm^2 d) 10 cm^2



9) In the given figure:

What is the value of x ?

- a) 1 b) 3
c) $\sqrt{5}$ d) $\sqrt{3}$



10) The triangle ABC is right-angled at B , If $AB = 24\text{ cm}$, $AC = 30\text{ cm}$, what is the length of $\overline{BC}$?

- a) $6\sqrt{41}\text{ cm}$ b) 324 cm c) 18 cm d) 6 cm

11) A rectangle with a length of 16 cm and a width of 12 cm , what is the length of its diagonal ?

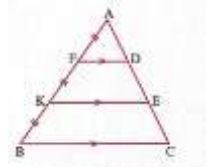
- a) 28 cm b) 56 cm c) 192 cm d) 20 cm

- 12) If the area of a rectangle is 60 cm^2 and its width is 5 cm , what is its diagonal length?
- a) 12 cm b) 13 cm c) 169 cm d) 34 cm
- 13) If ABCD is a square, then $(AC)^2 = \dots\dots\dots$
- a) AB b) $(AB)^2$ c) $2(AB)^2$ d) $4(AB)^2$
- 14) Which of the following numbers can be the lengths of the sides of a right-angled triangle?
- a) $7, 7, 4$ b) $12, 5, 13$ c) $5, 8, 7$ d) $3, 7, 5$
- 15) Which of the following numbers can be the lengths of the sides of an acute-angled triangle?
- a) $4, 4, 4\sqrt{2}$ b) $10, 8, 6$
c) $8, 3, 7, 7.5$ d) $9, 6, 6$
- 16) A triangle with side lengths of $5 \text{ cm}, 12 \text{ cm}, 13 \text{ cm}$, what is its area?
- a) 30 cm^2 b) 32.5 cm^2 c) 78 cm^2 d) 60 cm^2
- 17) ABC is an obtuse-angled triangle at A, $AB = 4 \text{ cm}$, $BC = 7 \text{ cm}$, then AC can be $\dots\dots\dots \text{ cm}$
- a) 5 b) 6 c) 7 d) 8
- 18) In triangle ABC ,
if $(BC)^2 + (AB)^2 = 48 \text{ cm}^2$, $CA = 7 \text{ cm}$, then $\angle B$ is $\dots\dots\dots$
- a) acute b) right c) obtuse d) straight
- 19) In triangle XYZ ,
if $90^\circ < m(\angle Y) < 180^\circ$, then $(XZ)^2 \dots\dots\dots (XY)^2 + (YZ)^2$
- a) = b) < c) $\leq$ d) >
- 20) If $\angle A$ complements $\angle B$ in triangle ABC, then $(AB)^2 \dots\dots\dots (AC)^2 + (BC)^2$
- a) = b) < c) > d) $\neq$

21) In the given figure:

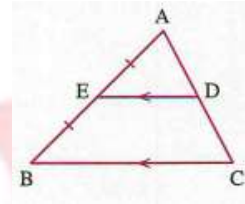
If the length of $AC=12$ cm, What is the length of $\overline{AE}$?

- a) 8 cm b) 4 cm c) 6 cm d) 8 cm



22) In the given figure:

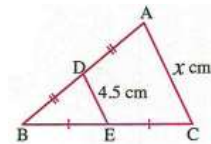
What is the ratio between the length of $\overline{AD}$ and the length of $\overline{DC}$?



- a) 1 : 1 b) 1 : 2 c) 2 : 1 d) 1 : 3

23) In the given figure:

What is the value of X ?

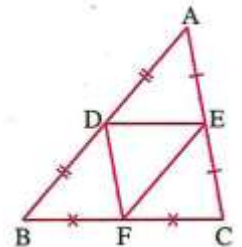


- a) 9 b) 4.5 c) 13.5 d) 2.25

24) In the given figure:

If the perimeter of $\triangle ABC$ is equal to 18 cm ,

What is the perimeter of $\triangle DEF$?



- a) 6 cm b) 36 cm c) 9 cm d) 12 cm

25) What is the number of medians of an obtuse triangle ?

- a) zero b) 1 c) 2 d) 3

26) If $\overline{YD}$ is a median of triangle XYZ , and M is the centroid of the triangle, then $MD = \dots\dots\dots YM$.

- a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{2}{3}$ d) $\frac{3}{2}$

27) If M is the centroid of the triangle ABC and $\overline{BD}$ is a median, then BD:MD=

- a) 2 : 3 b) 1 : 3 c) 3 : 2 d) 3 : 1

28) If $\overline{AD}$ is a median of triangle ABC, and M is the centroid, then AD=.....AM.

- a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{2}{3}$ d) $\frac{3}{2}$

29) If M is the centroid of the triangle ABC and D is The midpoint of $\overline{BC}$, then AD=

- a) 2AM b) $\frac{2}{3}$ MD c) $\frac{3}{2}$ MD d) 4MD

30) If ABC is a right-angled triangle at B and D is the midpoint of $\overline{AC}$, then BD =

- a) AC b) $\frac{1}{2}$ BC c) $\frac{1}{2}$ AC d) AB

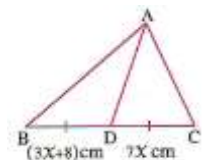
31) If $\overline{AD}$ is a median of triangle ABC, it has a length of 9cm, and M is the centroid of the triangle, then DM=.....cm.

- a) 3 b) 4.5 c) 6 d) 9

32) In The given figure:

$\overline{AD}$ is a median of triangle ABC What is the length of $\overline{BC}$?

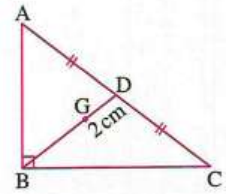
- a) 3 cm c) 6cm
C) 14 cm d) 28 cm



33) In The given figure:

If G is the centroid of the triangle ABC , Which is right-angled

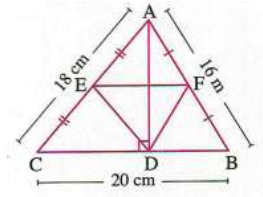
$GD = 2\text{cm}$ What is the length of $\overline{AC}$?



- a) 8cm b) 12cm c) 18cm d) 24cm

34) In the given figure:

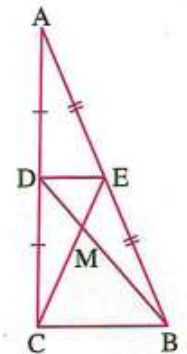
The perimeter of $\triangle FDE = \dots\text{cm}$.



- a) 37 b) 18 c) 54 d) 27

35) In the given figure :

If $BD = 18\text{ cm}$, $EC = 15\text{ cm}$, and $BC = 12\text{ cm}$,
then the perimeter of the triangle $EMD = \dots\dots\dots\text{ cm}$

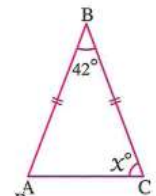


- a) 15 b) 17 c) 22.5 d) 45

36) In the given figure:

What is the value of x ?

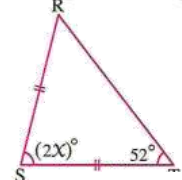
- a) 42 b) 21 c) 69 d) 84



37) In the given figure:

What is the value of x ?

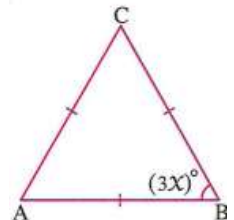
- a) 26 b) 52 c) 76 d) 38

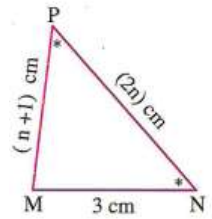


38) In the given figure:

What is the value of x ?

- a) 10 b) 20 c) 30 d) 60





39) In the given figure:

What is the length of $\overline{PN}$?

- a) 8 cm b) 3 cm c) 6 cm d) 4 cm

40) In $\triangle XYZ$, if $XY = YZ = XZ$, What is the measure of X ?

- a) 30° b) 60° c) 90° d) 180°

41) In $\triangle ABC$, $AB = AC$, $m(\angle C) = 65^\circ$, what is the measure of $\angle A$?

- a) 30° b) 50° c) 55° d) 130°

42) What is the measure of the exterior angle of an equilateral triangle?

- a) 30° b) 60° c) 90° d) 120°

43) In $\triangle DEF$, $DE = EF$, $m(\angle E) = 70^\circ$, what is the measure of $\angle F$?

- a) 20° b) 35° c) 55° d) 70°

44) In $\triangle XYZ$, $ZY = ZX$, $m(\angle Z) = 120^\circ$, what is the measure of $\angle X$?

- a) 30° b) 60° c) 90° d) 120°

45) If ABC is a right-angled triangle at A , $AB = AC$,

What is the measure of $\angle B$?

- a) 30° b) 60° c) 90° d) 45°

46) XYZ is an isosceles triangle in which $m(\angle Y) = 100^\circ$,

What is the measure of $(\angle Z)$?

- a) 100° b) 80° c) 50° d) 40°

47) If the measure of one of the base angles in an isosceles triangle is 30° , then the triangle is

- a) obtuse triangle. c) acute triangle.
b) equilateral triangle. d) right triangle.

48) In $\triangle ABC$, $AB = AC$, $m(\angle A) = 3x^\circ$, $m(\angle B) = 6x^\circ$,

what is the value of x ?

- a) 30 b) 12 c) 90 d) 60

49) In $\triangle XYZ$, if $XY = XZ$, then the exterior angle at the vertex Z ?

- a) acute b) obtuse c) right d) reflex

50) If the lengths of two sides of an isosceles triangle are 3 cm , 7 cm ,

What is the length of the third side ?

- a) 3cm b) 4 cm c) 7 cm d) 10cm

51) In $\triangle ABC$, $AB = AC$, $m(\angle A) = 60^\circ$, if the perimeter of the triangle is

18 cm , what is the length of $\overline{BC}$?

- a) 60 cm b) 18 cm c) 9 cm d) 6cm

52) In $\triangle ABC$, $CA = CB$, $m(\angle C) = m(\angle A)$, what is the measure of $\angle B$?

- a) 45° b) 60° c) 90° d) 120°

53) If C belongs to the axis of symmetry of $\overline{AB}$, What is the value of $AC - BC$?

- a) Zero b) 1 c) 2 d) 4



54) In $\triangle XYZ$, $XY = XZ$, $\overline{XE}$ is the median, $m(\angle YXE) = 30^\circ$

What is the measure of $\angle YXZ$?

- a) 30° b) 60° c) 90° d) 15°

55) In $\triangle LMN$, $LM = LN$, E belongs to MN , $\overline{LE} \perp \overline{MN}$, if $ME = 4$ cm ,

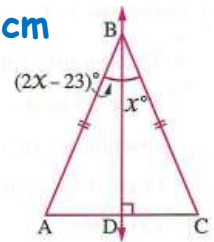
What is the length of $\overline{MN}$?

- a) 12cm b) 8cm c) 4cm d) 2cm

56) In the given figure;

What is the measure of $\angle C$?

- a) 23° b) 46° c) 60° d) 67°



57) If the measure of one of the angles of a right-angled triangle is 45° ,

How many axes of symmetry does it have?

- a) Zero b) 1 c) 2 d) 3

58) In $\triangle ABC$, if $m(\angle A) = m(\angle B) \neq 60^\circ$,

How many axes of symmetry does it have ?

- a) Zero b) 1 c) 2 d) 3

59) If $\triangle ABC$ has one axis of symmetry , $m(\angle ABC) = 120^\circ$,

What is the measure of angle A ?

- a) 60° b) 30° c) 45° d) 120°

60) If the length of any side of a triangle is equal to $\frac{1}{3}$ of the perimeter of the triangle , How many axes of symmetry does this triangle have?

- a) Zero b) 1 c) 2 d) 3

61) ABCD is a quadrilateral in which : $AB = AD$, $BC = DC$, then $\overleftrightarrow{AC}$ is $\overleftrightarrow{BD}$

- a) Parallel to b) equal to
c) axis of symmetry of d) Coincident to

62) In the square ABCD , $\overleftrightarrow{BD}$ is the axis of symmetry of.....

- a) $\overleftrightarrow{AB}$ b) $\overleftrightarrow{AC}$ c) $\overleftrightarrow{AD}$ d) $\overleftrightarrow{CD}$

63) The length of the side opposite to the angle of measure 30° in a right-angled triangle is equal to the length of the hypotenuse.

- a) half b) twice c) quarter d) one third

64) In 30° - 60° - 90° triangle, the ratio between the length of the hypotenuse and the length of the side opposite to the angle of measure 30° is equal to

.....

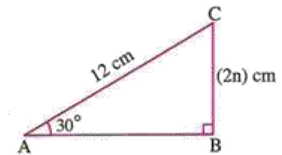
- a) 1 : 2 b) 2 : 1 c) 1 : 1 d) 2 : 3

65) In 30° - 60° - 90° triangle, the ratio between the length of the median drawn from the right angle to the length of the side opposite the angle of measure 30° is equal to

- a) 1 : 2 b) 2 : 1 c) 1 : 1 d) 1 : 3



66) In the given figure: What is the value of n ?



- a) 3 b) 6 c) 9 d) 12

67) Which of the following formulas is used to calculate the number of diagonals in a convex polygon ?

- a) $\frac{3(n-2)}{n}$ b) $\frac{n(n-2)}{3}$ c) $\frac{2(n-3)}{n}$ d) $\frac{n(n-3)}{2}$

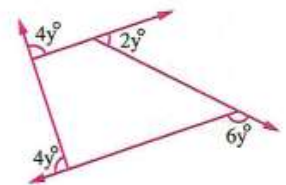
68) What is the sum of the measures of the interior angles of the convex hexagon ?

- a) 900° b) 720° c) 540° d) 360°

69) In the given figure:

What is the value of y ?

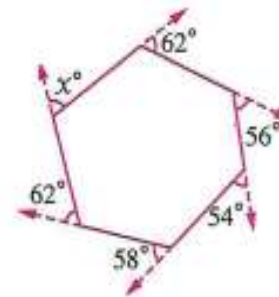
- a) 16 b) 20
c) 21.5 d) 22.5



70) In the given figure:

What is the value of x ?

- a) 58 b) 62
c) 68 d) 72



71) What is the measure of the interior angle of a regular polygon with 18 sides ?

- a) 160° b) 135° c) 144° d) 150°

72) How many sides does a regular polygon have if the measure of one of its interior angles is 144° ?

- a) 12 b) 10 c) 14 d) 11

73) How many sides does a regular polygon have if the measure of one of its exterior angles is 20° ?

- a) 12 b) 16 c) 14 d) 18

74) How many diagonals does a convex heptagon have?

- a) 7 b) 11 c) 13 d) 14

75) What is the convex polygon that has no diagonals?

- a) The hexagon c) The pentagon
c) The quadrilateral d) The triangle

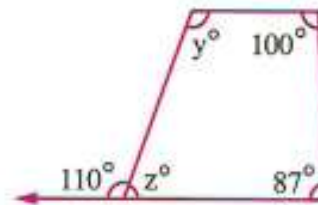
76) What convex polygon has a number of diagonals equal to the number of its sides ?

- a) The hexagon c) The pentagon
c) The quadrilateral d) The heptagon.

77) In the given figure:

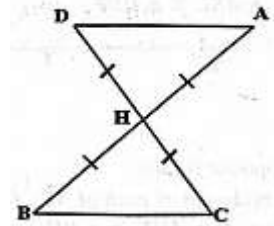
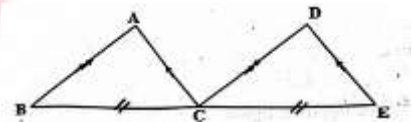
What is the value of y ?

- a) 70° b) 80°
c) 103° d) 93°



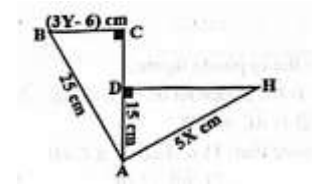
78) If a regular convex polygon has 14 diagonals and a perimeter of 35 cm ,
What is the length of its side?

- a) 21 cm b) 14 cm c) 7 cm d) 5 cm

Q2 Answer the following :-**1) In the opposite figure: H is the midpoint of each of AB, CD** 1. Prove that $\triangle AHD \equiv \triangle BHC$ 2. Prove that $AD \parallel BC$ **Proof****1. $\therefore H$ is the midpoint of each of $AB, CD \therefore AH = BH, DH = CH$** **$\therefore AH = BH, DH = CH, m(\angle AHD) = m(\angle BHC) \quad V.O.A$** **$\therefore \triangle AHD \equiv \triangle BHC$** **2. $\therefore m(\angle A) = m(\angle B)$ alternate angles $\therefore AD \parallel BC$** **2) In the opposite figure: , $AC \parallel DE, AB \parallel DC, BC = CE$** **Prove that $\triangle ABC \equiv \triangle DCE$** **Proof** **$\therefore AC \parallel DE \therefore m(\angle ACB) = m(\angle E)$ corresponding angles 1** **$\therefore AB \parallel DC \therefore m(\angle DCE) = m(\angle B)$ corresponding angles 2** **$\therefore BC = CE$ 3****From 1, 2 and 3 $\therefore \triangle ABC \equiv \triangle DCE$**

3) In the opposite figure : $\triangle ABC \cong \triangle HAD$

Find the value of $X + Y$



$$3Y - 6 = 15$$

$$3Y = 21$$

$$Y = 7$$

$$5X = 25$$

$$X = 5$$

$$X + Y = 5 + 7 = 12$$

4) In the opposite figure : $MD \parallel HG$

Find the perimeter of the polygon MDHG

$$\therefore MD \parallel HG$$

$$\therefore m(\angle GDM) = m(\angle DGH) = 90^\circ$$

In $\triangle GDM$

$$\therefore m(\angle GDM) = 90^\circ$$

$$\therefore (GD)^2 = (GM)^2 - (MD)^2$$

$$\therefore GD = \sqrt{(GM)^2 - (MD)^2} = \sqrt{(13)^2 - (5)^2} = 12 \text{ cm}$$

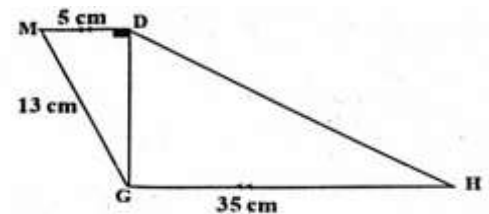
In $\triangle DGH$

$$\therefore m(\angle DGH) = 90^\circ$$

$$\therefore (HD)^2 = (GD)^2 + (GH)^2$$

$$\therefore DH = \sqrt{(GD)^2 + (GH)^2} = \sqrt{(12)^2 + (35)^2} = 37 \text{ cm}$$

$$\therefore \text{perimeter of the polygon MDHG} = 5 + 13 + 12 + 37 = 67 \text{ cm}$$



5) In the opposite figure: $ABCD$ is a quadrilateral $m(\angle A) 90^\circ$

Prove that $m(\angle CDB) 90^\circ$

In ΔDAB

$$\therefore m(\angle DAB) = 90^\circ$$

$$\therefore (DB)^2 = (BA)^2 + (DA)^2$$

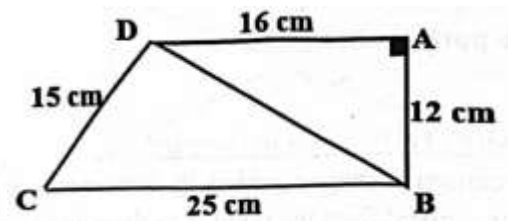
$$\therefore DB = \sqrt{(BA)^2 + (DA)^2} = \sqrt{(12)^2 + (16)^2} = 20\text{cm}$$

In ΔDCB

$$\therefore (CB)^2 = (25)^2 = 625, \quad (BD)^2 + (CD)^2 = (20)^2 + (15)^2 = 625$$

$$\therefore (CB)^2 = (BD)^2 + (CD)^2$$

$$\therefore m(\angle CDB) = 90^\circ$$



6) In the opposite figure :

BD is a median of triangle ABC , $m(\angle B) = 90^\circ$,
 E is the midpoint of GC , F is the midpoint of GA , $AC = 16\text{ cm}$, find the length of BD and EF

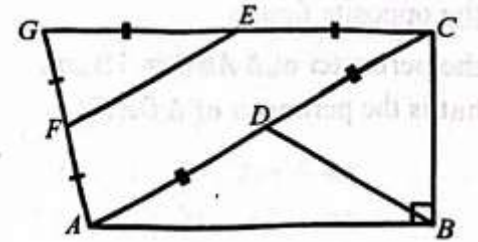
$\therefore BD$ is a median of triangle ABC , $m(\angle B) = 90^\circ$, $AC = 16\text{ cm}$

$$\therefore BD = \frac{1}{2} AC = 8\text{cm}$$

In ΔABC

$\therefore E$ is the midpoint of GC , F is the midpoint of GA

$$\therefore FE = \frac{1}{2} AC = 8\text{cm}$$



7) In the opposite figure :

ABC is a right-angled triangle at A ,
 AF is a median, find the length of AF .

$\therefore AF$ is a median of triangle ABC , $m(\angle A) = 90^\circ$

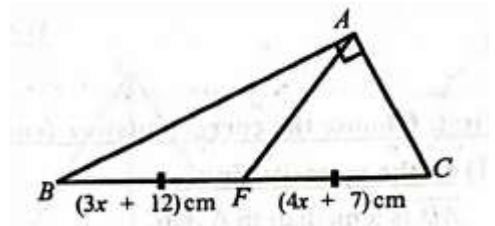
$$\therefore AF = \frac{1}{2} BC = 8\text{cm}$$

$$\therefore FC = FB$$

$$\therefore 3X + 12 = 4X + 7$$

$$X = 5, \quad BF = 3X + 12 = 3 \times 5 + 12 = 27$$

$$\therefore AF = \frac{1}{2} BC \quad \therefore AF = 27\text{cm}$$



8) In the opposite figure :

ABC is a right-angled triangle at B ,
BD is a median , find the length of BD.

$\therefore$ BD is a median of triangle ABC , $m(\angle B) = 90^\circ$

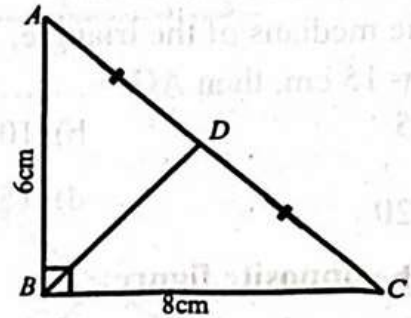
$$\therefore BD = \frac{1}{2} AC$$

$$\therefore m(\angle B) = 90^\circ$$

$$\therefore (AC)^2 = (AB)^2 + (BC)^2$$

$$AC = \sqrt{6^2 + 8^2} = 10\text{cm}$$

$$\therefore BD = \frac{1}{2} \times 10 = 5\text{ cm}$$

**9) In the opposite figure:**

If E and F are the midpoints of AB and AC respectively
CG = 10 cm , BC = 12 cm GB = 6 cm ,
Find the perimeter of $\triangle EFG$

$\therefore$ E and F are the midpoints of AB and AC

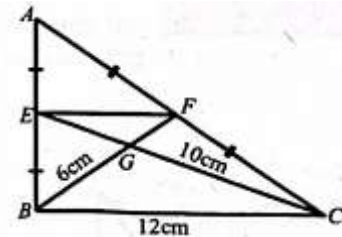
$$\therefore EF = \frac{1}{2} BC = 6\text{cm}$$

In $\triangle ABC$

$\therefore$ E and F are the midpoints of AB and AC , G is the intersection point of BF and CE

$$\therefore \text{BF and CE are medians} \quad \therefore GF = \frac{1}{2} GB = 3\text{cm} \quad , \quad EG = \frac{1}{2} GC = 5\text{cm}$$

$$\therefore \text{perimeter of } \triangle EFG = 6 + 3 + 5 = 14\text{ cm}$$

**10) In the opposite figure:**

AD is a median in $\triangle ABC$, $m(\angle A) = 90^\circ$, $m(\angle C) = 60^\circ$

Prove that $\triangle ADC$ is an equilateral triangle

$\therefore$ AD is a median in $\triangle ABC$, $m(\angle A) = 90^\circ$

$$\therefore AD = \frac{1}{2} BC \quad 1$$

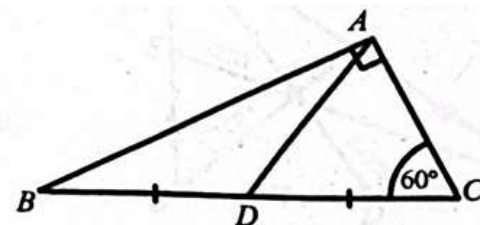
$$\therefore m(\angle A) = 90^\circ , m(\angle C) = 60^\circ$$

$$\therefore m(\angle B) = 30^\circ$$

$$\therefore AC = \frac{1}{2} BC \quad 2$$

From 1 and 2 $AC = AD = DC$

$\therefore \triangle ADC$ is an equilateral triangle



11) In the opposite figure:BD is a median in $\triangle ABC$

AC = 20 cm, AB = 12 cm BD = AD,

Prove that $\triangle ABC$ is a right-angled triangleThen find the area of $\triangle ABC$ $\therefore$ BD is a median in $\triangle ABC$, AD = BD

$$\therefore BD = \frac{1}{2} CA \quad \therefore m(\angle ABC) = 90^\circ$$

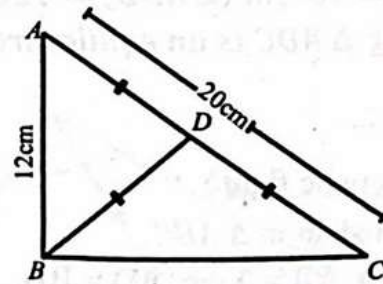
 $\therefore \triangle ABC$ is a right-angled triangle

$$\therefore (CB)^2 = (CA)^2 - (BA)^2$$

$$CB = \sqrt{20^2 - 12^2} = 16\text{cm}$$

$$\text{Area of tri angle} = \frac{1}{2} \times \text{base} \times \text{height}$$

$$= \frac{1}{2} \times 12 \times 16 = 96\text{ cm}^2$$

**12) In the opposite figure:**Prove that $\triangle ACD$ is an isosceles triangle

$$\therefore m(\angle CAB) = 40^\circ, AB = EC$$

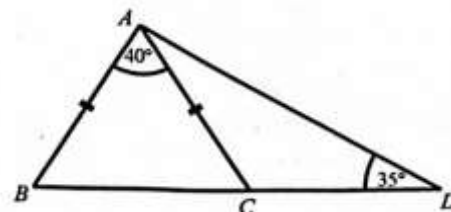
$$\therefore m(\angle B) = m(\angle ACB) = (180 - 40) \div 2 = 70$$

$$\therefore m(\angle ACD) = 180 - 70 = 110 \text{ supplementary angles}$$

In $\triangle ACD$

$$\therefore m(\angle CAD) = 180 - 110 - 35 = 35$$

$$\therefore m(\angle D) = m(\angle CAD) = 35$$

 $\therefore \triangle ACD$ is an isosceles triangle**13) In the opposite figure:** $\triangle ABC$ is an equilateral triangle

$$m(\angle E) = 110^\circ, EB = ED$$

Find $m(\angle EBC)$ In $\triangle ABC$

$$\therefore AB = AC = BC$$

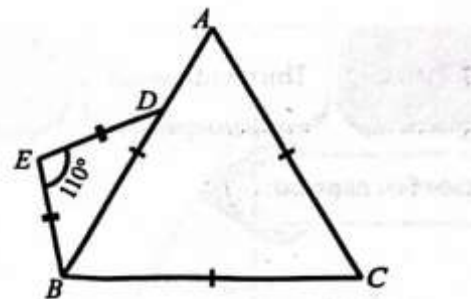
$$\therefore \text{each interior angle} = 60^\circ$$

In $\triangle EDB$

$$\therefore EB = ED, m(\angle E) = 110^\circ$$

$$\therefore m(\angle EDB) = m(\angle EBD) = (180 - 110) \div 2 = 35$$

$$\therefore m(\angle EBC) = 35 + 60 = 95$$



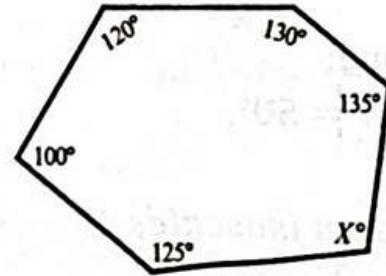
14) Find the number of sides of the convex polygon whose sum of its interior angles is 540°

5 sides

15) In the opposite figure:

Find the value of X

$$720 - (120 + 100 + 125 + 135 + 130) = 110$$



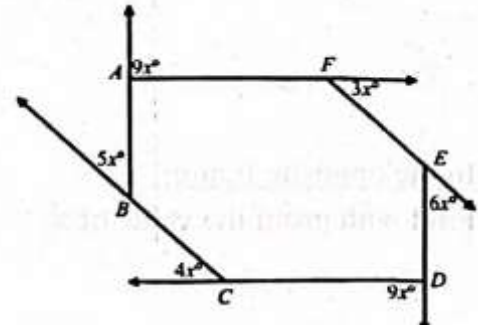
16) In the opposite figure:

Find $m(\angle BCD)$

$$9x + 5x + 4x + 9x + 6x + 3x = 360$$

$$36x = 360 \quad x = 10$$

$$4x = 4 \times 10 = 40 \quad m(\angle BCD) = 180 - 40 = 140$$



17) Find the number of sides of regular polygon whose interior angle is 144°

Decagon 10 sides

18) Find the number of sides of the convex polygon that has 20 diagonals

Octagon 8 sides

19) In the opposite figure:

$AB = AC$, $m(\angle C) = 50^\circ$

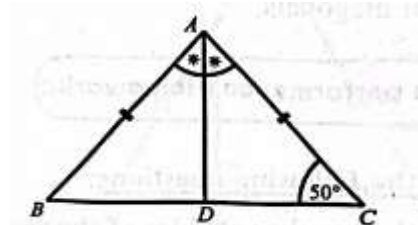
AD bisects $(\angle A)$

Find with proof $m(\angle CAD)$

$$\because AB = AC, \text{ AD bisects } (\angle A) \therefore ED \perp BC$$

$$\therefore m(\angle ADC) = 90^\circ, m(\angle C) = 50^\circ$$

$$m(\angle CAD) = 180 - 50 - 90 = 40^\circ$$



20) In the opposite figure:

$$m(\angle B) = 70^\circ, , m(\angle D) = 50^\circ$$

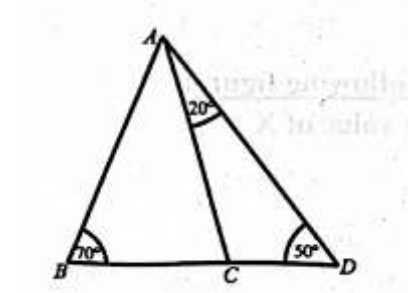
$$, m(\angle CAD) = 20^\circ$$

Prove that $\triangle ABC$ is an isosceles triangle

$$\therefore m(\angle DAC) = 20^\circ, m(\angle D) = 50^\circ$$

$$\therefore m(\angle ACB) = 20 + 50 = 70 \quad \text{exterior angle .}$$

$$\therefore m(\angle ACB) = m(\angle B) \quad \therefore \triangle ABC \text{ is an isosceles triangle}$$



21) In the opposite figure:

Find the value of X

$$2X = 360 - (135 + 120)$$

$$X = 52.5$$

Another solution

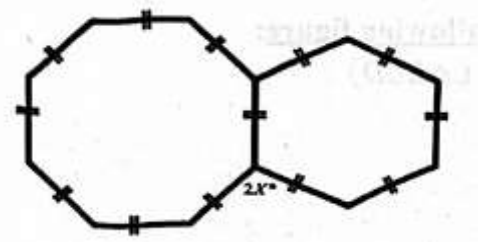
$$n_1 = 8$$

$$n_2 = 6$$

$$2X = \frac{360}{8} + \frac{360}{6}$$

$$2X = 60 + 45 = 105$$

$$X = 52.5$$

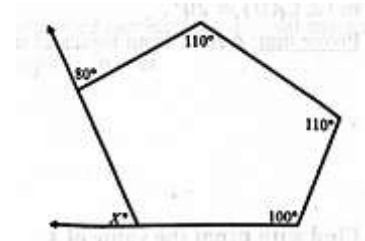


22) In the opposite figure:

Find the value of X

$$\text{Supp. of } x = 540 - (100 + 110 + 110 + 100) = 120$$

$$X = 180 - 120 = 60$$



Unit 4

1) The opposite table represents the ascending cumulative frequency table for the marks of 40 students in prep two:

(a) The number of students who obtains marks less than 40 marks equals students

- a) 43 b) 36 c) 4 d) 24

(b) The number of students who obtains marks less than 60 marks equals students

- a) 0 b) 40 c) 36 d) 60

2) The following table shows the frequency distribution for the daily studying hours for a set of students:

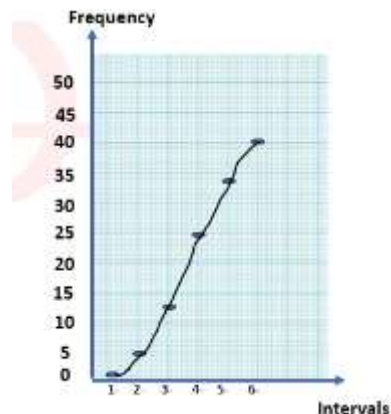
Upper of sets	ascending cumulative frequency
Less than 10	0
Less than 20	5
Less than 30	14
Less than 40	24
Less than 50	36
Less than 60	40

Sets	1-	2-	3-	... 4- ..	5-	sum
Number of workers	5	8	12	9	6	 40

From the previous table, answer the following:

- 1- Complete the table
- 2- Form the ascending cumulative frequency table
- 3- Represent the data using the ascending cumulative frequency curve

Intervals	Ascending cumulative frequency
Less than 1	0
Less than 2	5
Less than 3	13
Less than 4	25
Less than 5	34
Less than 6	40



3) The given steam and leaf plot represents the ages of the parents who attended the school parent's meeting they were 24 parents.

a- Draw the ascending cumulative frequency curve

b- What is the percentage of parents whose ages are under 40 years ?

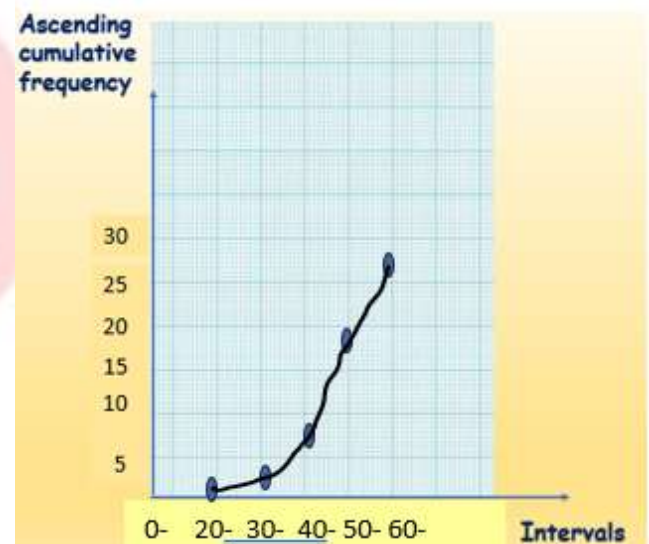
Ages	20-	30-	40-	50-
frequency	3	6	9	6

Stem	Leaves
2	5 7 9
3	2 5 6 7 7 7
4	1 2 4 6 6 7 7 8 8
5	0 1 1 4 5 6

Intervals	Ascending cumulative frequency
Less than 20	0
Less than 30	3
Less than 40	9
Less than 50	18
Less than 60	24

Key 3/2 means 32 years

The percentage = $\frac{9}{24} \times 100 = 37.5\%$



4) The given pie chart illustrates the marks of students , if the number of the students is 120

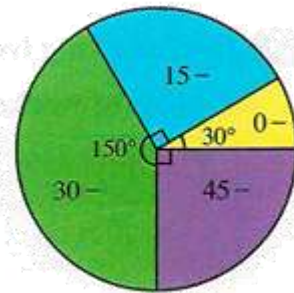
Form the ascending cumulative frequency table and represent it .

$$0 - \frac{30}{360} \times 120 = 10$$

$$15 - \frac{90}{360} \times 120 = 30$$

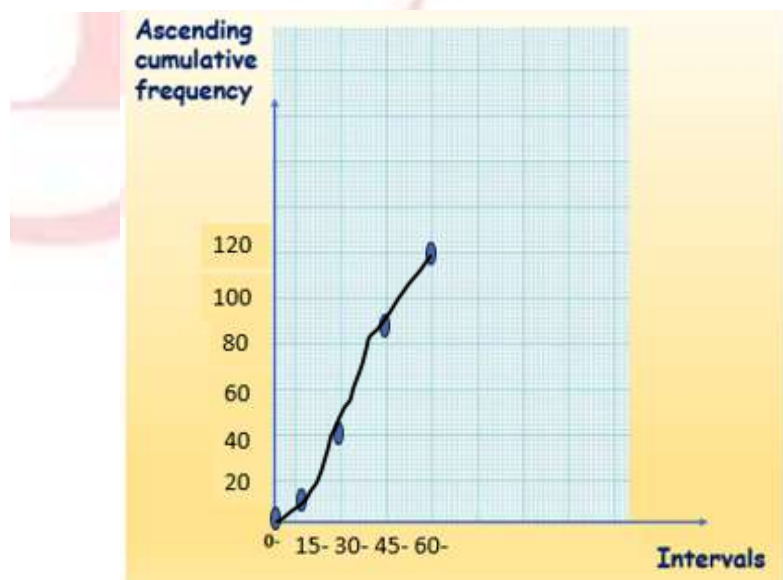
$$30 - \frac{150}{360} \times 120 = 50$$

$$45 - \frac{90}{360} \times 120 = 30$$



Marks	0-	15-	30-	45-
frequency	10	30	50	30

Intervals	Ascending cumulative frequency
Less than 0	0
Less than 15	10
Less than 30	40
Less than 45	90
Less than 60	120



5) The following table shows the frequency distribution for the marks of 100 students in a math exam:

Marks	10 -	20 -	30 -	40 -	50 -
Frequency	10	20	30	24	16

From the previous table, answer the following (without solving):

1. Estimate the arithmetic mean.
2. Form the ascending cumulative frequency table and represent it graphically, then find the median.
3. Represent the data using a histogram, then find the mode

Intervals	f	x_m	$f \cdot x_m$
10-	10	15	150
20-	20	25	500
30-	30	35	1050
40-	24	45	1080
50-	16	55	880
total	100		3660

$$\bar{X} = \frac{\Sigma(f \cdot x_m)}{\Sigma f} = \frac{3660}{100} = 36.6$$

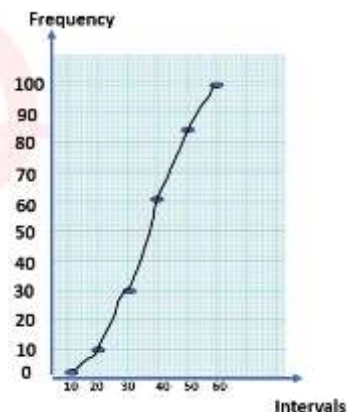
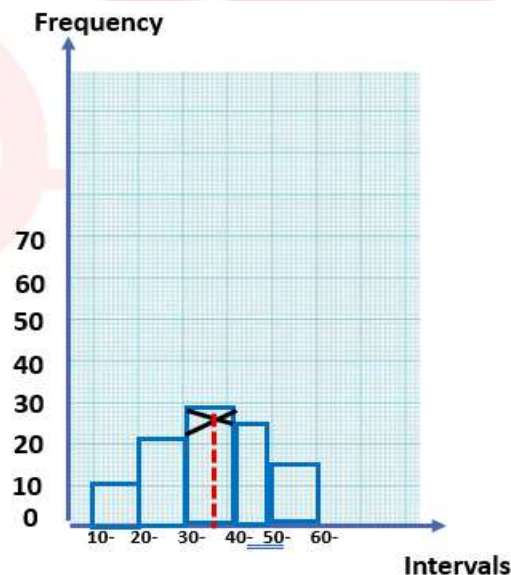
Mode = 36

Order = $100 \div 2 = 50$

Median = Q_2

$$\frac{Q - 30}{40 - 30} = \frac{50 - 30}{60 - 30}$$

$Q_2 = 36.6$ approximately



Intervals	Ascending cumulative frequency
Less than 10	0
Less than 20	10
Less than 30	30
Less than 40	60
Less than 50	84
Less than 60	100

6) The following frequency table shows the marks of 150 students

Marks	4 –	12 –	20 –	28 –	36 –	44 –	52 –	The sum
Frequency	15	3 k	4 k	32	25	22	14	150

(a) What is the value of K ?

a) 5

b) 4

c) 6

d) 7

(b) What is the order of the median ?

a) 37.5

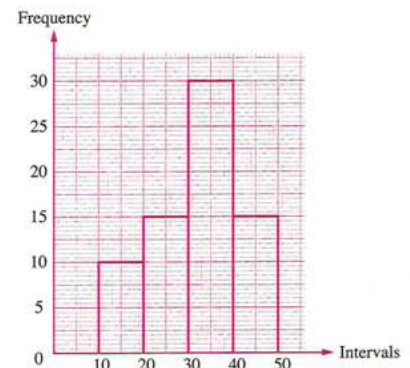
b) 75

c) 112.5

d) 150

Q2 Choose the correct answer :-

- 1) If $\Sigma f = 20$ and $\Sigma(f \cdot x_m) = 100$ then the arithmetic mean $\bar{X} = \dots\dots\dots$
- a) 120 b) 80 c) 50 d) 5
- 2) What is the center of the second interval of the intervals 5-, 15-, 25-, 35-?
- a) 5 b) 10 c) 15 d) 20
- 3) If the upper limit of an interval is 18 and the center is 15.5 what is the lower limit of an interval ?
- a) 12 b) 13.5 c) 12.5 d) 13
- 4) If the lower limit of an interval is 5 and the center is 7.5 then the length of the interval is
- a) 5 b) 7.5 c) 10 d) 12.5
- 5) If the arithmetic mean of a frequency distribution is 39.4 and the total of the frequencies is 100 , then the sum of the products of the frequency of each interval and its center =
- a) 60.6 b) 139.4 c) 0.394 d) 3,940
- 6) If the projection of the point (35 , 5) on the ascending cumulative frequency curve along the intervals axis determines the median , what is the order of the median ?
- a) 5 b) 10 c) 35 d) 70
- 7) If the projection of the point (23 , 30) on the ascending cumulative frequency curve along the intervals axis determines the median , what is the value of the median ?
- a) 23 b) 30 c) 60 d) 46
- 8) In the opposite graph what is the value of mode ?
- a) 30 b) 40 c) 35 d) 45



حمل الآن

مجاناً وحصرياً

المراجعة رقم (3)

الترم الاول



Q1: Choose the correct answer

1 If $x^2 - 2xy + y^2 = 25$, then $X - y = \dots\dots\dots$

- (a) 25 (b) 5 (c) -5 (d) ± 5

2 If $(2a - 5)(3a - 2) = 6a^2 + k a + 10$, then $k = \dots\dots\dots$

- (a) 15 (b) 19 (c) -19 (d) 4

3 The multiplicative inverse of the number $(\sqrt{3} - \sqrt{2})$ is $\dots\dots\dots$

- (a) 1 (b) $\sqrt{3} + \sqrt{2}$ (c) $\sqrt{2} - \sqrt{3}$ (d) $\frac{1}{\sqrt{3} + \sqrt{2}}$

4 $[3, 5] - \{5\} = \dots\dots\dots$

- (a) $[3, 4]$ (b) $[3, 5[$ (c) $\{3, 4\}$ (d) $]3, 5]$

5 What is the perimeter of a square with an area of $a \text{ cm}^2$?

- (a) $a^4 \text{ cm}$ (b) $(\sqrt{a})^4 \text{ cm}$ (c) $4\sqrt{a} \text{ cm}$ (d) $4a \text{ cm}$

6 If $X = [-1, \infty[$, Then $X^c = \dots\dots\dots$

- (a) $] -\infty, -1]$ (b) $] -\infty, -1[$ (c) $] -\infty, 1[$ (d) $] -\infty, 1]$

7 The S.S of the equation: $x^3 = 8$ in Q is $\dots\dots\dots$

- (a) $\{-2\}$ (b) $\{2\}$ (c) $\{-2, 2\}$ (d) $\{64\}$

8 In ΔABC : $(AB)^2 = (BC)^2 - (AC)^2$, then $\angle C \dots\dots\dots$

- (a) acute (b) straight (c) obtuse (d) right

9 If two triangle ABC and LMN are congruent, then $\dots\dots\dots$

- (a) $BC = LN$ (b) $LM = CA$ (c) $NM = CB$ (d) $AB = MN$



10 If the polynomial $(9x^2 + bx + 1)$ is a perfect square, then what is the value of b ?

- (a) ± 9 (b) ± 4 (c) ± 6 (d) ± 12

11 The additive inverse of $(\sqrt{5} - \sqrt{3})$ is

- (a) $\sqrt{5} + \sqrt{3}$ (b) $\sqrt{3} - \sqrt{5}$ (c) $\sqrt{5} - \sqrt{3}$ (d) $-\sqrt{5} - \sqrt{3}$

12 In ΔABC , if $AB \perp BC$ and $AB = BC$, then $m(\angle A) = \dots\dots\dots$

- (a) 30° (b) 45° (c) 60° (d) 90°

13 The set of negative real numbers is

- (a) $]-\infty, 0]$ (b) $[0, \infty[$ (c) $]-\infty, 0[$ (d) $]0, \infty[$

14 If $x^2 + 4x + k$ is a perfect square, then $k = \dots\dots\dots$

- (a) 1 (b) 2 (c) 3 (d) 4

15 If $x - y = 4$ and $x + y = 10$, then $x(x - y) + y(x - y) = \dots\dots\dots$

- (a) 4 (b) 6 (c) 14 (d) 40

16 If $6^x = 11$, then $6^{x+1} = \dots\dots\dots$

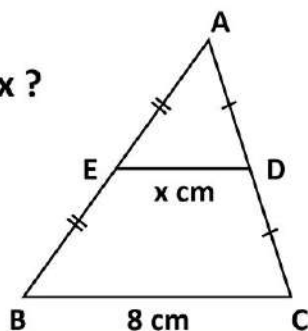
- (a) 12 (b) 22 (c) 66 (d) 72

17 The triangle whose side lengths are 10 cm, 12 cm, 8 cm. is

- (a) acute-angled (b) right-angled (c) obtuse-angled (d) equilateral

18 In the given figure:
What is the value of x ?

- (a) 16 (b) 8
(c) 4 (d) 2



19 Sixth the number: $2^{12} \times 3^{12}$ is

- (a) 6^2 (b) 6^4 (c) 6^{11} (d) 6^{23}

20 Eighth of $2^{24} = \dots\dots\dots$

- (a) 2^{16} (b) 2^{23} (c) 2^{21} (d) 2^8

21 The S.S of the equation: $x^2 + 9 = 0$ in R is

- (a) $\{-9\}$ (b) $\{-3, 3\}$ (c) $\{-3\}$ (d) $\emptyset$

22 $(\sqrt{5} - \sqrt{3})(\sqrt{5} + \sqrt{3})$ is

- (a) 2 (b) 3 (c) 8 (d) 15

23 If $\Delta ABC \cong \Delta XYZ$ and $m(\angle X) + m(\angle Z) = 140^\circ$, $m(\angle B) = \dots\dots\dots$

- (a) 70° (b) 220° (c) 40° (d) 140°

24 $\{3\} \cap [3, 6] = \dots\dots\dots$

- (a) $\{3\}$ (b) $\emptyset$ (c) $]3, 6]$ (d) $\{6\}$

25 $[-2, 1] \cap \{0, 1, 2\} = \dots\dots\dots$

- (a) $[0, 1]$ (b) $[0, 1[$ (c) $\{0, 1\}$ (d) $\{-2, -1, 0, 1, 2\}$

26 If the expression $x^2 + ax + 64$ is a perfect square, then $a = \dots\dots\dots$

- (a) 16 (b) ± 16 (c) 8 (d) ± 8

27 Which of the following represents the factorization of the polynomial $16x^2 - 24x^3$ by taking out GCF?

- (a) $8x(2x - 3x^2)$ (b) $4x^2(4 - 6x)$ (c) $8x^2(2 - 3x)$ (d) $8(2x^2 - 3x^3)$



28 If ΔABC is right-angled at A and $AB = AC$, then $m(\angle B) = \dots\dots\dots$

- (a) 30° (b) 45° (c) 60° (d) 90°

29 The greatest common factor of the expression $12x^3y^4 + 8x^2y^3$

- (a) $2x^2y^3$ (b) $4x^2y^3$ (c) $4x^3y^4$ (d) $12x^3y^4$

30 A square has an area of $16x^4 + 64x^2 + 64 \text{ cm}^2$. What is the length of its side in terms of x?

- (a) $(4x + 8) \text{ cm}$ (b) $(8x + 4) \text{ cm}$ (c) $(4x^2 + 8) \text{ cm}$ (d) $(8x^2 + 4) \text{ cm}$

31 $\sqrt[3]{(-8)^2} = \dots\dots\dots$

- (a) -4 (b) -2 (c) 2 (d) 4

32 What is the value of $4^2 + 4^2 + 4^2 + 4^2$?

- (a) 4^2 (b) 4^3 (c) 4^8 (d) 4^{16}

33 If $2^{x-1} = 1$, what is the value of x?

- (a) 0 (b) -1 (c) 1 (d) -2

34 If $\Delta ABC \cong \Delta XYZ$ and $m(\angle A) + m(\angle B) = 130^\circ$, $m(\angle Z) = \dots\dots\dots$

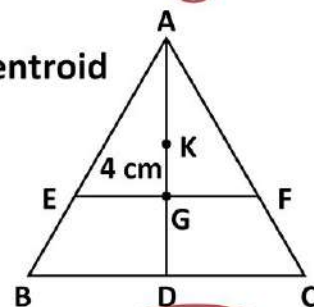
- (a) 50° (b) 65° (c) 130° (d) 180°

35 If $a^2 + b^2 = 15$, $2ab = 10$, Then $a + b = \dots\dots\dots$

- (a) 5 (b) -5 (c) 25 (d) ± 5

36 If G is the centroid of the triangle ABC, and K is the centroid of the triangle AEF, what is the length of GD?

- (a) 2 cm (b) 4 cm
(c) 6 cm (d) 8 cm



37 If $x + y = 10$, $a - b = 7$, Then the value of: $x(a - b) - y(b - a) = \dots\dots\dots$

- (a) 3 (b) 17 (c) 51 (d) 70

38 If $x^2 - 11x + 28 = (x - a)(x - b)$, then the value of $a + b = \dots\dots\dots$

- (a) -16 (b) -11 (c) 11 (d) 16

39 What is the center of the third interval of the intervals 6-, 10-, 14-, 18-, ?

- (a) 12 (b) 14 (c) 16 (d) 18

40 If $a x^2 - b = (3x - 2)(3x + 2)$, what is the value of $a + b$?

- (a) -13 (b) 13 (c) -5 (d) 5

41 How many sides does a regular polygon have if the measure of one of its exterior angles is 20° ?

- (a) 12 (b) 14 (c) 16 (d) 18

42 In ΔABC : $(AB)^2 = (BC)^2 + (AC)^2 + 5$, then $m(\angle C) \dots\dots\dots 90^\circ$.

- (a) $>$ (b) $<$ (c) $=$ (d) $\leq$

43 $x^2y - xy^2 = \dots\dots\dots$

- (a) $xy(x - y)$ (b) $x^2y(1 - y)$ (c) $xy^2(x - 1)$ (d) $xy(y - x)$

44 The rectangle whose dimensions are 6 cm. and 8 cm, then its diagonal length equals cm.

- (a) 7 (b) 17 (c) 15 (d) 10

45 If ABCD is a quadrilateral in which $AB = AD$ and $BC = DC$, then $\overleftrightarrow{AC}$ is $\overleftrightarrow{BD}$

- (a) parallel to (b) axis of symmetry (c) congruent to (d) equal to



46 ΔXYZ is right at Y, if $XZ = 25$ cm, $XY = 20$ cm, Then $YZ = \dots\dots\dots$ cm

- (a) 15 (b) 20 (c) 225 (d) 400

47 The solution set of the equation: $x^3 - x = 0$ in R is $\dots\dots\dots$

- (a) $\{0\}$ (b) $\{1\}$ (c) $\{-1\}$ (d) $\{0, -1, 1\}$

48 $x(a - b) + y(a - b) + a - b = a - b(\dots\dots\dots)$

- (a) $x - y$ (b) $x + y$ (c) $x + y - 1$ (d) $x + y + 1$

49 If two triangle ABC and XYZ are congruent, then $\dots\dots\dots$

- (a) $BC = XZ$ (b) $YX = CA$ (c) $ZY = CB$ (d) $AB = YZ$

50 How many diagonals does a convex heptagon have?

- (a) 7 (b) 11 (c) 13 (d) 14

51 When completing the square for: $(x^2 + 9)$ add $\dots\dots\dots$

- (a) $\pm 3x$ (b) $\pm 6x$ (c) $\pm 9x$ (d) $\pm 12x$

52 If $\overline{AB} \cong \overline{CD}$, Then $AB \div CD = \dots\dots\dots$

- (a) 0 (b) 1 (c) AB (d) 2

53 For the expression: $x^2 - 2x - k$ can be factorized, then $k \neq \dots\dots\dots$

- (a) 8 (b) 3 (c) 6 (d) 15

54 In the thirty sixty triangle, the ratio between the length of the median drawn from the vertex of the right angle and the length of the side opposite to the angle of measure 30° is $\dots\dots\dots$

- (a) $2 : 1$ (b) $1 : 2$ (c) $1 : 1$ (d) $2 : 3$



55 In ΔABC , $AB = AC$, $m(\angle B) = 6x^\circ$, $m(\angle A) = 3x^\circ$, then $x = \dots\dots\dots$

- (a) 60° (b) 30° (c) 12° (d) 90°

56 $(75)^2 + 75 \times 25 = \dots\dots\dots$

- (a) 75 (b) 750 (c) 7500 (d) 75000

57 If $\Sigma f = 50$, $\Sigma (f \cdot x_m) = 800$, what is the arithmetic mean $\bar{x}$?

- (a) 16 (b) 160 (c) 750 (d) 850

58 The nearest integer to $\sqrt[3]{25}$ is $\dots\dots\dots$

- (a) 5 (b) 3 (c) 2 (d) 12.5

59 The irrational number located between 2 and 3 is $\dots\dots\dots$

- (a) $\sqrt{7}$ (b) $\sqrt{10}$ (c) 2.5 (d) $\sqrt{3}$

60 If $(x - 3)$ is a factor of the expression: $x^2 - 4x + 3$, then the other factor is $\dots\dots\dots$

- (a) $(x + 1)$ (b) $(x - 1)$ (c) $(x + 3)$ (d) $(x - 3)$

61 In the rhombus ABCD. the axis of symmetry of $\overline{AC}$ is $\dots\dots\dots$

- (a) $\overleftrightarrow{BD}$ (b) $\overleftrightarrow{AB}$ (c) $\overleftrightarrow{AD}$ (d) $\overleftrightarrow{CD}$

62 If $(x + a)(y + b) = xy + 5x + 7y + 35$, then what is the value of ab ?

- (a) 2 (b) 12 (c) 35 (d) 17

63 If the upper limit of an interval is 50 and its center is 45, what is the lower limit of this interval?

- (a) 35 (b) 40 (c) 45 (d) 55



64 The value of $3^{11} + 3^{12} = \dots\dots\dots$

- (a) 4×3^{10} (b) 3×3^{22} (c) 4×3^{20} (d) 4×3^{11}

65 The solution set of the equation: $2x^2 - 9x + 9 = 0$ in R is $\dots\dots\dots$

- (a) $\{3\}$ (b) $\{2, 3\}$ (c) $\{\frac{3}{2}, 3\}$ (d) $\{-\frac{3}{2}, -3\}$

66 If $(x - 2)(x + 5) = 0$, which of the following is correct?

- (a) $x = 2$ or $x = 5$ (b) $x = -2$ or $x = 5$ (c) $x = -2$ or $x = -5$ (d) $x = 2$ or $x = -5$

67 What is the measure of the interior angle of a regular polygon with 18 sides?

- (a) 135° (b) 144° (c) 150° (d) 160°

68 If $\Delta ABC \cong \Delta LMN$, $m(\angle A) = 50^\circ$, $m(\angle M) = 60^\circ$, $m(\angle C) = \dots\dots\dots$

- (a) 60° (b) 50° (c) 70° (d) 10°

69 If $a + b = 5$, $a^2 - b^2 = 15$, then what is the value of $a - b$?

- (a) 20 (b) 3 (c) 75 (d) 10

70 ABC is a triangle in which $m(\angle A) = m(\angle B) + m(\angle C)$, then $m(\angle A) = \dots\dots\dots$

- (a) 180° (b) 90° (c) 108° (d) 60°

71 If X lies on the axis of symmetry of AB, then $XA \dots\dots\dots XB$

- (a) $=$ (b) $>$ (c) $\cong$ (d) $<$

72 What is the number of sides of a polygon whose sum of measures of its interior angles is 1980° ?

- (a) 10 (b) 11 (c) 12 (d) 13



- 73 If $(x + b)(x + 3) = x^2 + ax + 15$, then what is the value of $a + b$?
- (a) 3 (b) 12 (c) 13 (d) 5
- 74 How many sides does a convex polygon have if the sum of the measures of its interior angles is 2340° ?
- (a) 12 (b) 13 (c) 14 (d) 15
- 75 Completing the perfect square for the expression: $x^2 + 9$ we add to it
- (a) $\pm 12x$ (b) $\pm 6x$ (c) 12 (d) 6
- 76 $x^{m-1} \times \dots = 1, x \neq 0$
- (a) x^{-m-1} (b) x^{m+1} (c) x^{m-1} (d) x^{-m+1}
- 77 If $A \in L$, where L is axis of symmetry of BC , then $\overline{AB} \dots \overline{AC}$
- (a) = (b) > (c) $\cong$ (d) <
- 78 If $\Sigma f = 100$, $\Sigma (f \cdot x_m) = 3,500$, what is the arithmetic mean $\bar{x}$?
- (a) 35 (b) 350 (c) 3,500 (d) 3.5
- 79 If the lower limit of an interval is 15 and its center is 17.5, what is the length of the interval?
- (a) 5 (b) 10 (c) 20 (d) 25
- 80 If $x < \sqrt[3]{36} < x + 1, x \in \mathbb{Z}$, then $x = \dots$
- (a) 2 (b) 3 (c) 4 (d) 6
- 81 In ΔXYZ , $XY = XZ$, XE is a median, If $m(\angle YXE) = 30^\circ$, Then $m(\angle YXZ) = \dots$
- (a) 15° (b) 30° (c) 60° (d) 90°



82 If $\overline{AB} \cong \overline{CD}$, Then $AB - CD = \dots\dots\dots$

- (a) 0 (b) 1 (c) AB (d) 2

83 If $x^2 + b = 12$, $x + a = 6$, What the numerical value of the expression $x^3 + ax^2 + bx + ab$?

- (a) 6 (b) 12 (c) 2 (d) 72

84 If $x \in [-3, \infty[$, then $\dots\dots\dots$

- (a) $x < -3$ (b) $x \leq -3$ (c) $x > -3$ (d) $x \geq -3$

85 An isosceles triangle, the measure of one of its angles is 60° , then the number of its axis of symmetry is $\dots\dots\dots$

- (a) 0 (b) 1 (c) 2 (d) 3

86 $2^{2024} = 2^{2023} + \dots\dots\dots$

- (a) 2 (b) 2024 (c) 2^{2024} (d) 2^{2023}

87 If $\frac{x}{3} = \frac{9}{x^2}$, then $x = \dots\dots\dots$

- (a) 1 (b) 3 (c) 9 (d) 27

88 If $x^2 - a = (x - 5)(x + 5)$, Then $a = \dots\dots\dots$

- (a) 5 (b) -25 (c) 25 (d) 10

89 In ΔABC , if $\angle A$ complements $\angle B$, then $(AB)^2 \dots\dots\dots (BC)^2 + (AC)^2$

- (a) $>$ (b) $<$ (c) $=$ (d) $\leq$

90 How many sides does a regular polygon have if the measure of one of its interior angles is 144° ?

- (a) 10 (b) 11 (c) 12 (d) 14



91 If $(x - 3)$ is a factor of the expression: $x^2 - 4x + 3$, then the other factor is

- (a) $(x + 1)$ (b) $(x - 1)$ (c) $(x + 3)$ (d) $(x - 3)$

92 The number of medians of the right-angled triangle is

- (a) zero (b) 1 (c) 2 (d) 3

93 If $x + \sqrt{28} = \sqrt{7}$, what is the value of x ?

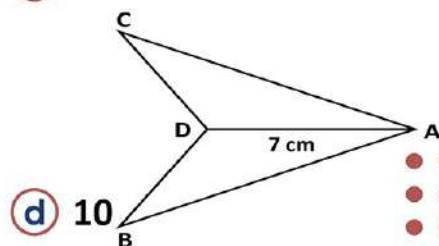
- (a) $\sqrt{21}$ (b) $\sqrt{7}$ (c) $-\sqrt{21}$ (d) $-\sqrt{7}$

94 If $x^3 + y^3 = 24$, $x + y = 6$, then $x^2 - xy + y^2 = \dots\dots\dots$

- (a) 4 (b) 12 (c) 18 (d) 30

95 If $\triangle ABD \cong \triangle ACD$, $AD = 7$ cm, The perimeter of the figure $ABDC = 20$ cm, Then the perimeter of $\triangle ABD = \dots\dots\dots$ cm

- (a) 27 (b) 17 (c) 26



- (d) 10

96 If $x^3 + 27 = (x + 3)(x^2 + k + 9)$, then $k = \dots\dots\dots$

- (a) $-6x$ (b) $-3x$ (c) $3x$ (d) $6x$

97 If the expression : $x^2 + bx - 10$ can be factorized, then b may be equal to

- (a) 3 (b) 2 (c) 1 (d) -1

98 If $\triangle ABC$ has three axes of symmetry and AD is a median, Then $AC = \dots\dots\dots$ BD .

- (a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{3}$ (d) $\frac{1}{4}$

99 If the measure of one of the base angles of an isosceles triangle is 40° then the measure of its vertex angle equals

- (a) 100° (b) 80° (c) 50° (d) 40°



- 100 If the upper limit of an interval is 18 and its center is 15.5, what is the lower limit of this interval?
- (a) 12 (b) 12.5 (c) 13 (d) 13.5
- 101 $\sqrt{25 + 144} = 5 + \dots\dots\dots$
- (a) 12 (b) 13 (c) 8 (d) 6
- 102 The two base angles of the isosceles right-angled triangle are
- (a) supplementary (b) 180° (c) complementary (d) different
- 103 $] -1, 3] \cup \{0, -1\} = \dots\dots\dots$
- (a) $]0, 3]$ (b) $] -1, 3[$ (c) $[-1, 3]$ (d) $[0, 3]$
- 104 The axis of symmetry of a line segment is the bisector of this line segment
- (a) parallel (b) inclined (c) skew (d) perpendicular
- 105 If $(X + 3)$ is one factor of the expression : $x^2 + x - 6$, then the other factor is
- (a) $x + 3$ (b) $x - 4$ (c) $x + 1$ (d) $x - 2$
- 106 The irrational number in the following numbers is
- (a) $\sqrt{\frac{25}{9}}$ (b) $\sqrt[3]{\frac{1}{27}}$ (c) $\sqrt{3}$ (d) $\sqrt[3]{125}$
- 107 The factorization of $x^3 + 2x^2 - 4x - 8$ is
- (a) $(x^2 - 4)(x - 2)$ (b) $(x - 2)(x + 2)^2$ (c) $(x + 2)(x - 2)$ (d) $(x^2 + 4)(x - 2)$
- 108 If M is the point of intercection of the medians of ΔABC , AD is a median of length 6 cm, then $AM = \dots\dots\dots$ cm
- (a) 1 (b) 2 (c) 4 (d) 3



- 109 If $\Delta ABC \cong \Delta LMN$, then, $m(\angle B) = m(\angle \dots\dots\dots)$
- (a) LMN (b) MNL (c) LNM (d) NLM
- 110 If $x + y = 3$, $x^2 - xy + y^2 = 12$, then $x^3 + y^3 = \dots\dots\dots$
- (a) 4 (b) 36 (c) 9 (d) 24
- 111 In ΔABC , $AB = AC$, $m(\angle B) = x + 30^\circ$, $m(\angle C) = 2x + 5^\circ$, the $x = \dots\dots\dots$
- (a) 25° (b) 20° (c) 35° (d) 65°
- 112 If M is the point of intersection of the medians of ΔABC , D is a midpoint of BC, then $AD = \dots\dots\dots$
- (a) 2 AM (b) $\frac{2}{3}MD$ (c) $\frac{3}{2}AM$ (d) 4 MD
- 113 The set of non-negative real numbers = $\dots\dots\dots$
- (a) $]0, \infty[$ (b) $]-\infty, 0[$ (c) $[0, \infty[$ (d) $]-\infty, 0]$
- 114 The cube whose volume is 24 cm^3 , its edge length = $\dots\dots\dots \text{ cm}$
- (a) 12 (b) 8 (c) $\sqrt[3]{24}$ (d) $\sqrt{24}$
- 115 If $x - y = 5$, $x^2 + xy + y^2 = 7$, then $x^3 - y^3 = \dots\dots\dots$
- (a) 2 (b) 7 (c) 12 (d) 35
- 116 $Q \cap Q^c = \dots\dots\dots$
- (a) R (b) $\emptyset$ (c) Q (d) Q^c
- 117 ABC is a triangle in which $AB = AC$, $m(\angle A) = 60^\circ$ and the perimeter of this triangle equals 18 cm, then BC = $\dots\dots\dots \text{ cm}$
- (a) 10 (b) 12 (c) 6 (d) 8



118 $R_+ \cup R_- = \dots\dots\dots$

- (a) R (b) $\emptyset$ (c) R_+ (d) R^*

119 The multiplicative inverse of $\frac{\sqrt{2}}{6}$ is $\dots\dots\dots$

- (a) $\frac{\sqrt{2}}{2}$ (b) $3\sqrt{2}$ (c) $\sqrt{6}$ (d) $\sqrt{3}$

120 If $\frac{x}{3\sqrt{2}} = \frac{y}{2\sqrt{5}} = 1$, then the value of $x^2 + y^2 = \dots\dots\dots$

- (a) 36 (b) 38 (c) 42 (d) 45

121 The sum of lengths of any two sides of a triangle the length of the third side

- (a) $<$ (b) $=$ (c) $>$ (d) $\leq$

122 What is the center of the second interval of the intervals: 5– , 15– , 25– , 35– ?

- (a) 5 (b) 10 (c) 15 (d) 20

123 $\sqrt[3]{-64} + \sqrt{16} = \dots\dots\dots$

- (a) zero (b) 8 (c) -8 (d) ± 8

124 $[3, 7] -]3, 7[= \dots\dots\dots$

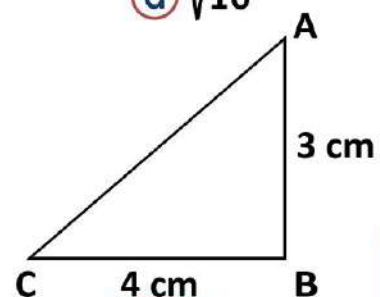
- (a) $]3, 7[$ (b) $[3, 7]$ (c) $\{3, 7\}$ (d) $\emptyset$

125 The irrational number located between 4 and 5 is $\dots\dots\dots$

- (a) $\sqrt{8}$ (b) $4\sqrt{2}$ (c) $3\sqrt{2}$ (d) $\sqrt{10}$

126 In the opposite figure:
what is the area of the square drawn on the side $\overline{AC}$?

- (a) 14 cm^2 (b) 1 cm^2
(c) 7 cm^2 (d) 25 cm^2



127 If the arithmetic mean ($\bar{x}$) of a frequency table is 24.5 and $\Sigma (f \cdot x_m) = 980$, what is the value of Σf ?

- (a) 40 (b) 50 (c) 60 (d) 70

128 The S.S of the equation: $x^3 - x^2 = 0$ in R is

- (a) {0} (b) {0, 1} (c) {1} (d) $\emptyset$

129 Which of the following numbers could be the lengths of sides of an obtuse-angled triangle?

- (a) 5, 5, 5 (b) 17, 8, 15 (c) 3, 5, 6 (d) 4, 7, 7

130 The point of concurrence of the medians of the triangle divides each of them in the ratio of..... from the vertex.

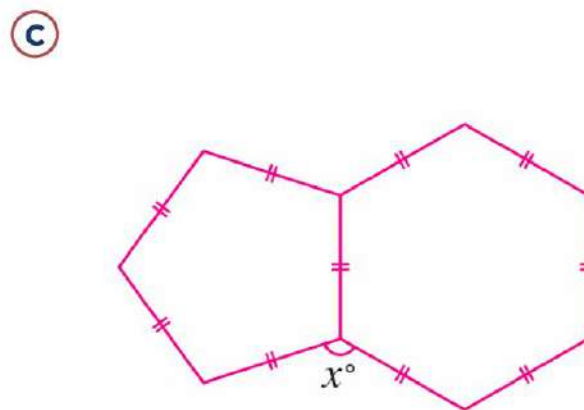
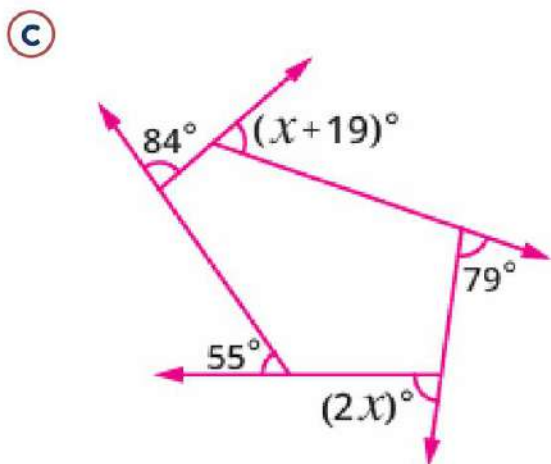
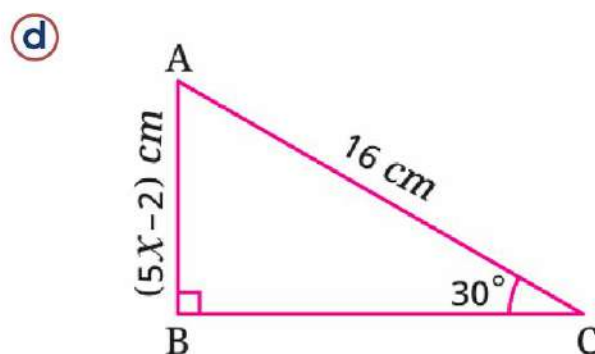
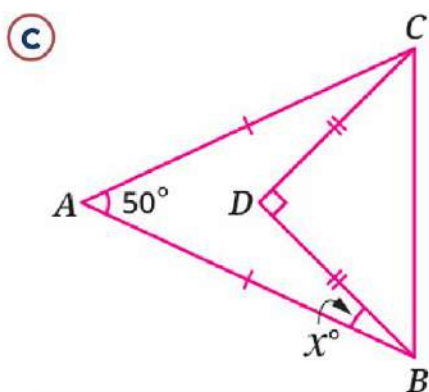
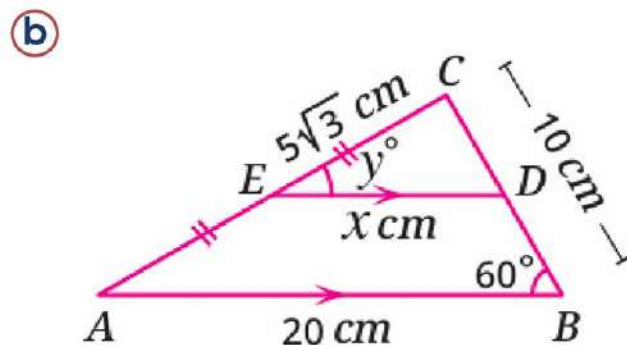
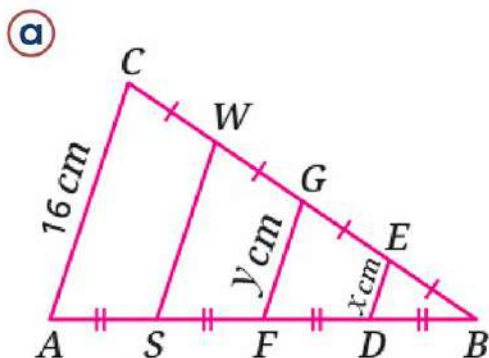
- (a) 2 : 1 (b) 1 : 2 (c) 1 : 3 (d) 3 : 1

اللهم اجعل هذا العمل خالصا لوجهك الكريم
واكتب له القبول والنفع يا كريم يا وهّاب.



Q2: Answer The Following

1 Find the value of x:



2 Find in real numbers the S.S of each of the following equations:

A $(x^3 + 5)(x^2 - 3) = \text{zero}$

.....
.....

C $x^3 = 0.125$

.....
.....

B $125x^3 - 7 = 20$

.....
.....

D $(5x - 2)^3 + 10 = 18$

.....
.....

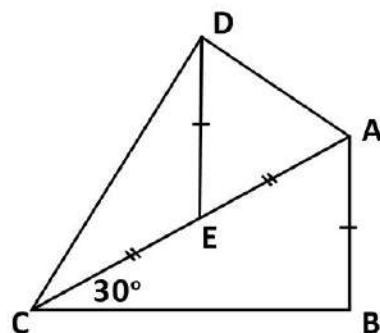
3 In the opposite figure:

$AB = DE$, E is the midpoint of $\overline{AC}$

$m(\angle B) = 90^\circ$, $m(\angle ACB) = 30^\circ$

Prove that: $m(\angle ADC) = 90^\circ$

.....
.....
.....



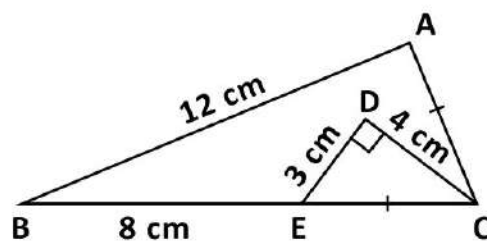
4 The point of intersection of medians of the triangle divides each of them in the ratio 3 : from the base.

5 In the following figure:

$EC = AC$

Prove that: $m(\angle A) = 90^\circ$

.....
.....



6 Find in the simplest form: $\frac{(\sqrt{7})^6 \times (\sqrt{7})^2}{(\sqrt{7})^3 \times \sqrt{7}}$

.....
.....



7 Factorize each of the following completely:

(A) $2x^2 + 7x + 3$

(B) $x^2 + 13x - 30$

(C) $4x^2 - 8x - 60$

(D) $x^2 - 3x - 28$

(E) $3x + 6 - (x + 2)^2$

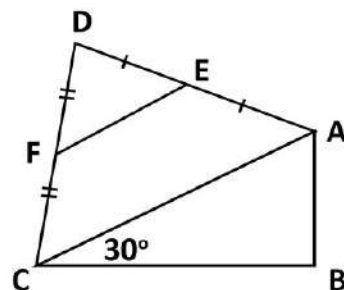
(F) $(7x - 5)^2 - 7x + 5$

8 Find in the simplest form: $5\sqrt{2} - \frac{1}{2}\sqrt{200} - (\sqrt[3]{5} \times \sqrt[3]{25})$

9 If the arithmetic mean of the following frequency distribution is 36.6, and the value of each of x and k

Marks	10–	20–	30–	x–	50–
Frequency	12	20	k	30	15





- 10 In the opposite figure:
 $m(\angle B) = 90^\circ$, $m(\angle ACB) = 30^\circ$
 ,E is the midpoint of $\overline{AD}$, F is the midpoint of $\overline{CD}$
 Prove that: $AB = EF$

- 11 Find the solution set of each of the following in R:

a $4x^2 + 20x = -25$

b $x^3 + x^2 - 2x = 2$

c $4x^2 = 25$

d $a^2 + 11a - 12 = 0$

e $x^2 - 6x + 8 = 0$

f $x^3 = 81x$

- 12 If $X =] -4 , 1]$, $Y = [-2 , 5 [$, find the following in the form of an interval using the number line

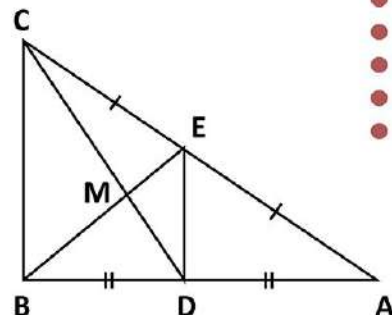
a $X \cup Y$

a $X \cap Y$

a $X - Y$



- 13** In the opposite figure:
D and E are the midpoints of AB and AC respectively
 $\overline{BE} \cap \overline{DC} = \{M\}$, $DE = 4$ cm
 $MD = 3$ cm. and $BE = 6$ cm
Find The perimeter of ΔBMC



- 14** Simplify the following expression to its simplest form:

$$\frac{(\sqrt{5})^{2n+3}}{(\sqrt{2})^{1-n} \times (\sqrt{10})^{n+1}}, \text{ Then find the value of the result at } n = 0$$

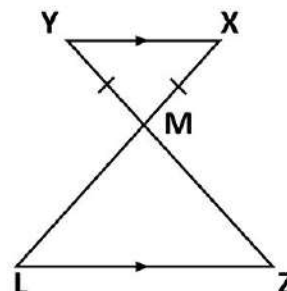
- 15** $a^2 - 6a + \dots$ (Complete to be perfect square)

- 16** The solution set of the equation: $X^2 + 25 = 0$ in R is

- 17** If $xy + 3x + yz + 3z = 15$, $y + 3 = 5$, then $x + z = \dots$

- 18** Simplify: $2\sqrt[3]{16} + \sqrt[3]{54} - \sqrt[3]{128}$

- 19** In the opposite figure :
 $XM = YM$
 $XY \parallel ZL$
Prove that:
 ΔMLZ is an isosceles triangle.



20 If $3x = 5$, then find the numerical value of the following:

(A) 3^{x+1}

(B) 3^{x-1}

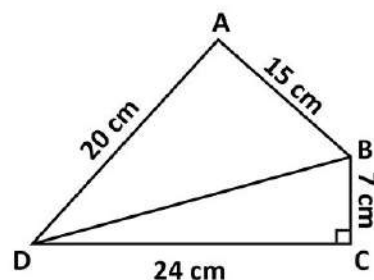
(C) $3^{x+2} + 3^{x+3}$

21 In the opposite figure:

$m(\angle C) = 90^\circ$. $AB = 15$ cm.

, $BC = 7$ cm, $CD = 24$ cm, $AD = 20$ cm.

Prove that : $m(\angle A) = 90^\circ$.



22 Find the S.S. of the equation: $x^3 + x = 0$ where $x \in \mathbb{R}$

23 If $\frac{x}{5 - \sqrt{5}} = 5 + \sqrt{5}$, then the value of x in the simplest form is

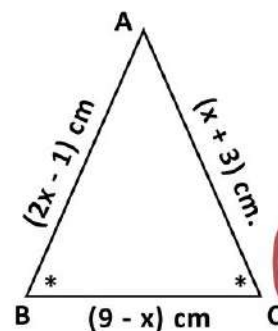
24 In the opposite figure:

$AB = (2x - 1)$ cm. , $AC = (x + 3)$ cm.

, $BC = (9 - x)$ cm.

, $m(\angle B) = m(\angle C)$

Find : The perimeter of ΔABC



25 Find each of the following in the simplest form :

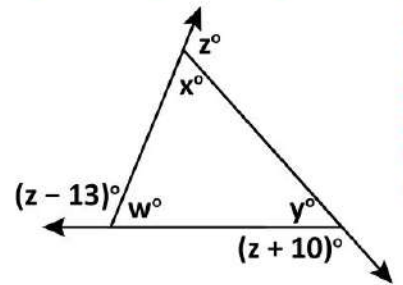
(A) $\sqrt{18} + \sqrt[3]{54} - 3\sqrt{2} - \frac{1}{2}\sqrt[3]{16}$

(B) $\sqrt{18} + \sqrt[3]{54} - \frac{\sqrt{216}}{\sqrt{12}} - \sqrt[3]{16}$



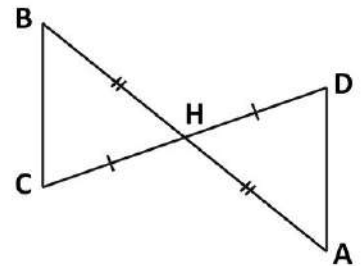


- 26 In the given figure:
Find the value of: x , y , w and z



- 27 In the opposite figure:
H is the midpoint of each of $\overline{AB}$, $\overline{CD}$
Prove that:

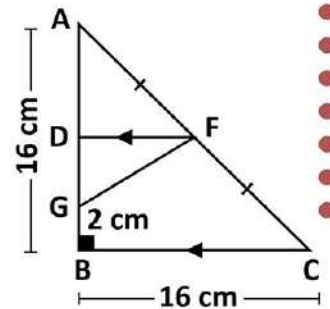
- (A) $\triangle AHD \cong \triangle BHC$
(B) $\overline{AD} \parallel \overline{BC}$



- 28 If $\Sigma f = 50$ and $\Sigma(f \cdot x_m) = 1700$, find the arithmetic mean $\bar{x}$.

- 29 If $\sqrt{y} = \sqrt{5} - \sqrt{3}$, then $y = \dots\dots\dots$

- 30 In the opposite figure:
 $m(\angle B) = 90^\circ$, $AB = BC = 16$ cm,
 $GB = 2$ cm, F is the midpoint of $\overline{AC}$, $\overline{DF} \parallel \overline{BC}$
Find with proof: The length of $\overline{GF}$.



- 31 Make the denominator of the number $\frac{4}{\sqrt{7} + \sqrt{3}}$ an integer.

- 32 The expression : $9x^2 + 16$ can be factorized as a perfect square by adding the term and its additive inverse.

- 33 Simplify: $4\sqrt{48} + \frac{4}{3}\sqrt{27} + \sqrt{75}$



34 Factorize each of the following Completely

a $x^2 + x - 30$

b $m^2 + 4m + km + 4k$

c $a^2 + 2ab + b^2 - 36$

d $5x^5 + 40x^2$

e $16x^4 - y^4$

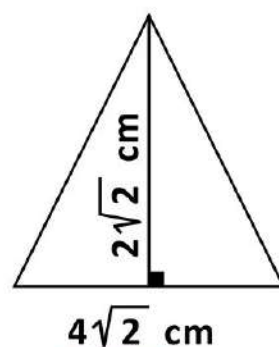
f $3x^2 + 14x + 15$

g $6x^3 - 60x - 2x^2$

h $2 - 2(x - 1)^3$

i $(98)^2 - 4$

35 In the opposite figure:
Find the area of triangle.



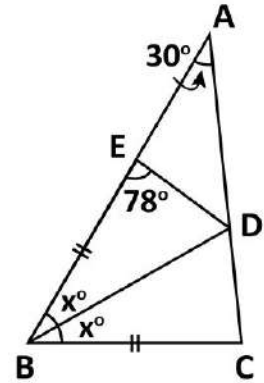


36 In the given figure:

BC = BE, BD bisects $\angle ABC$

Prove that: (a) $\triangle BCD \cong \triangle BED$

(b) Find the value of x



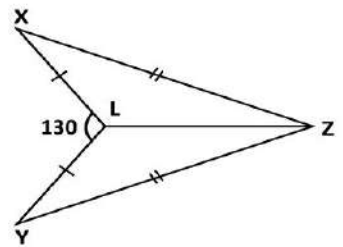
37 Simplify the expression $\frac{(\sqrt{3})^{2n+3}}{(\sqrt{2})^{1-n} \times (\sqrt{6})^{n-1}}$ to its simplest form,
then find the value of the result when $n = 0$

38 In the opposite figure:

YZ = XZ, XL = YL, $m(\angle XLY) = 130^\circ$

Prove that: $\triangle XLZ \cong \triangle YLZ$

,then find: $m(\angle XLZ)$

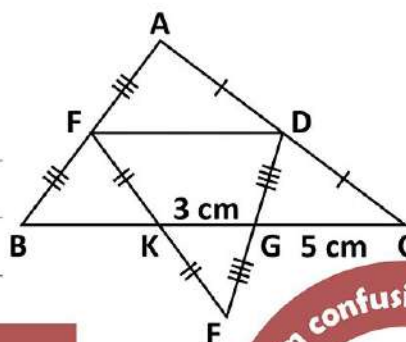


39 Simplify to its simplest form: $\sqrt{72} + \sqrt[3]{54} - \sqrt{50} - \sqrt[3]{16}$

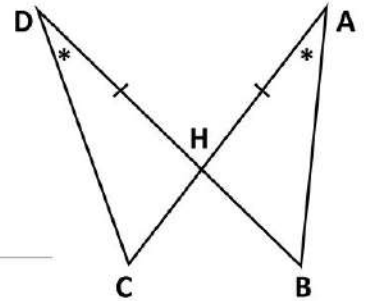
40 If $x = \frac{4}{\sqrt{7}-\sqrt{3}}$ and $y = \sqrt{7} - \sqrt{3}$, Find the value of : $(x + y)^2$ in its simplest form.

41 In the given figure:

Find with proof the length of $\overline{BK}$



- 42 In the opposite figure:
 $m(\angle A) = m(\angle D)$, $HA = HD$
 $CA \cap DB = \{H\}$
 Prove that $\triangle AHB \cong \triangle DHC$



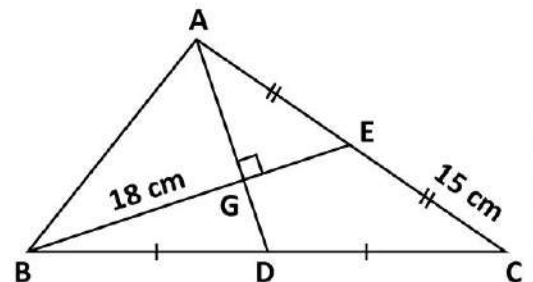
- 43 $]-3, 5] \cup \{-2, 3, 4\} = \dots\dots\dots$

- 44 The square whose side length is $\sqrt{7}$ cm. its area is

- 45 $3\sqrt{2} - 5\sqrt{2} = \dots\dots\dots$

- 46 Find in the simplest form: $2\sqrt{32} + \sqrt{18} + \sqrt{50}$

- 47 In the given figure:
 If E is the midpoint of AC, D is the midpoint of BC,
 $AD \perp BE$, $CE = 15$ cm, $BE = 18$ cm,
 Find with proof the length of AD

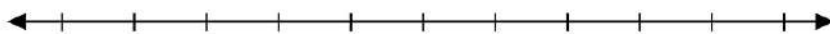


- 48 Find the arithmetic mean of the following frequency distribution:

Intervals	5–	15–	25–	35–	Total
Frequency	6	8	k	2	20



49 If $A =]-\infty, 3[$, $B = [-2, 5]$, Find using the number line :



- ☐ A $A - B$
☐ B $A \cap B$
☐ C $A \cup B$
☐ D A^c
☐ E B^c

50 If the expression: $x^2 + 4x + a$ is a perfect square, then $a = \dots\dots\dots$

51 If the length of the median drawn from a vertex of a triangle equals half the length of the opposite side to this vertex, then the angle at this vertex is

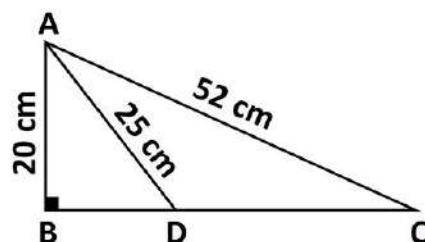
52 The quotient: $x^3 - 8$ by $x - 2$ is (when $x \neq 2$)

53 If $x^2 - K = (x - 3)(x + 3)$, Then the value of $K = \dots\dots\dots$

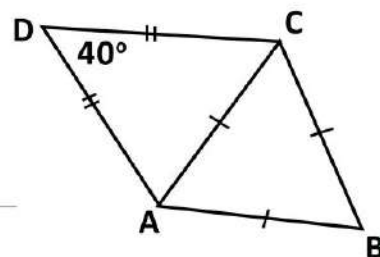
54 If $x - y = 5$, $x^2 + xy + y^2 = 7$, then $3x^3 - 3y^3 = \dots\dots\dots$

55 The bisector of the vertex angle of an isosceles triangle bisects the base and

56 In the opposite figure:
Find with proof, the length of $\overline{DC}$



57 In the opposite figure :
 $n(\angle D) = 40^\circ$, $DC = DA$
and ABC is an equilateral triangle.
Find: $m(\angle DCB)$



58 Find in R the S.S of the following:

(A) $5x^2 + 12x = 44$

(B) $x(x + 2) = 15$

(C) $3x^2 + 6 = 0$

(D) $(2x + 3)^2 + 2x - 3 = 0$

(E) $x(x - 2) + 5(x - 2) = 0$

(F) $2x^2 - 3x = 0$

(G) $x^2 - 7x - 18 = 0$

(H) $-x^2 + 24 = 5x$

59 Find in the simplest form: $(\sqrt{3} - 1)^2 + (\sqrt{3} + 1)(\sqrt{3} - 1)$

60 The medians of a triangle intersect at

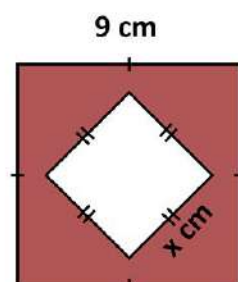
61 The point of intersection of medians of the triangle divides each of them in the ratio : 5 from the vertex

62 If AD is a median in ΔABC and M is the point of intersection of its medians ,AM = 8 cm, then MD = cm.

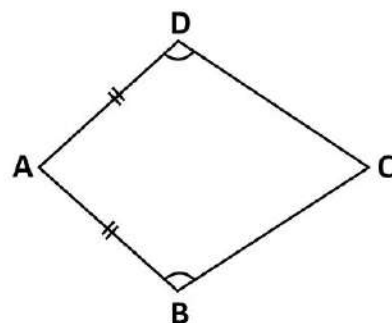
63 If $X =] -\infty , 10]$, then find the complement of X



- 64 Express the area of the coloured part in the given figure as a product of two factors



- 65 In the given figure:
ABCD is a quadrilateral in which:
 $AB = AD$, $m(\angle ABC) = m(\angle ADC)$
Prove that: $BC = DC$



- 66 In ΔABC , if $(AB - BC)(AB + BC) > (AC)^2$, then the type of $\angle C$ is

- 67 If $a^2 - b^2 = a + b$, then $a - b = \dots\dots\dots$

- 68 - $18y^2 + 81$ (Complete to be perfect square)

- 69 $\sqrt{36x^8} = \dots\dots\dots$

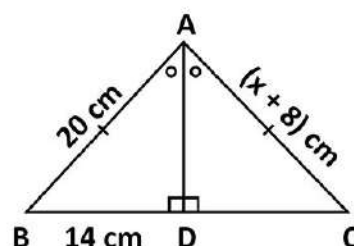
- 70 $\{-1, 0, 1\} \cap]-1, 1[= \dots\dots\dots$

- 71 $\frac{8}{\sqrt{2}} = \dots\dots\dots$

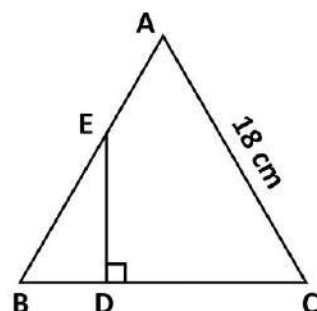
- 72 $[2, 7] -]1, 2[= \dots\dots\dots$

- 73 $\mathbb{N} \cap [1, 4] = \dots\dots\dots$

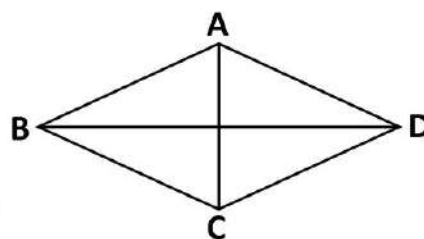
- 74 In the following figure:
 $AD \perp BC$, $BD = 14$ cm,
 AD bisects $\angle A$,
Find with proof the value of x



- 75 In the opposite figure:
 ΔABC is an equilateral triangle,
 $AC = 18$ cm, $BE = CD$, $ED \perp BC$
 Find with proof the length of $\overline{BD}$



- 76 In the given figure:
 $ABCD$ is a rhombus with a perimeter of 52 m and
 a diagonal BD of length 24 m.
 Find the area of the rhombus $ABCD$ in square meters.



- 77 From the following frequency table:

Sets	2–	6–	10–	14–	18–	22–	26–	Sum
Frequency	4	6	11	12	k	8	5	60

- a Find the value of k
 b Form the ascending cumulative frequency table and represent it graphically,
 Then find the median



Q1: Choose the correct answer

1 If $x^2 - 2xy + y^2 = 25$, then $X - y = \dots\dots\dots$

(a) 25

(b) 5

(c) -5

(d) ± 5

2 If $(2a - 5)(3a - 2) = 6a^2 + k a + 10$, then $k = \dots\dots\dots$

(a) 15

(b) 19

(c) -19

(d) 4

3 The multiplicative inverse of the number $(\sqrt{3} - \sqrt{2})$ is $\dots\dots\dots$

(a) 1

(b) $\sqrt{3} + \sqrt{2}$

(c) $\sqrt{2} - \sqrt{3}$

(d) $\frac{1}{\sqrt{3} + \sqrt{2}}$

4 $[3, 5] - \{5\} = \dots\dots\dots$

(a) $[3, 4]$

(b) $[3, 5[$

(c) $\{3, 4\}$

(d) $]3, 5]$

5 What is the perimeter of a square with an area of $a \text{ cm}^2$?

(a) $a^4 \text{ cm}$

(b) $(\sqrt{a})^4 \text{ cm}$

(c) $4\sqrt{a} \text{ cm}$

(d) $4a \text{ cm}$

6 If $X = [-1, \infty[$, Then $X^c = \dots\dots\dots$

(a) $] -\infty, -1]$

(b) $] -\infty, -1[$

(c) $] -\infty, 1[$

(d) $] -\infty, 1]$

7 The S.S of the equation: $x^3 = 8$ in $\mathbb{Q}$ is $\dots\dots\dots$

(a) $\{-2\}$

(b) $\{2\}$

(c) $\{-2, 2\}$

(d) $\{64\}$

8 In ΔABC : $(AB)^2 = (BC)^2 - (AC)^2$, then $\angle C \dots\dots\dots$

(a) acute

(b) straight

(c) obtuse

(d) right

9 If two triangle ABC and LMN are congruent, then $\dots\dots\dots$

(a) $BC = LN$

(b) $LM = CA$

(c) $NM = CB$

(d) $AB = MN$



10 If the polynomial $(9x^2 + bx + 1)$ is a perfect square, then what is the value of b ?

(a) ± 9

(b) ± 4

(c) ± 6

(d) ± 12

11 The additive inverse of $(\sqrt{5} - \sqrt{3})$ is

(a) $\sqrt{5} + \sqrt{3}$

(b) $\sqrt{3} - \sqrt{5}$

(c) $\sqrt{5} - \sqrt{3}$

(d) $-\sqrt{5} - \sqrt{3}$

12 In ΔABC , if $AB \perp BC$ and $AB = BC$, then $m(\angle A) = \dots\dots\dots$

(a) 30°

(b) 45°

(c) 60°

(d) 90°

13 The set of negative real numbers is

(a) $]-\infty, 0]$

(b) $[0, \infty[$

(c) $]-\infty, 0[$

(d) $]0, \infty[$

14 If $x^2 + 4x + k$ is a perfect square, then $k = \dots\dots\dots$

(a) 1

(b) 2

(c) 3

(d) 4

15 If $x - y = 4$ and $x + y = 10$, then $x(x - y) + y(x - y) = \dots\dots\dots$

(a) 4

(b) 6

(c) 14

(d) 40

16 If $6^x = 11$, then $6^{x+1} = \dots\dots\dots$

(a) 12

(b) 22

(c) 66

(d) 72

17 The triangle whose side lengths are 10 cm, 12 cm, 8 cm. is

(a) acute-angled

(b) right-angled

(c) obtuse-angled

(d) equilateral

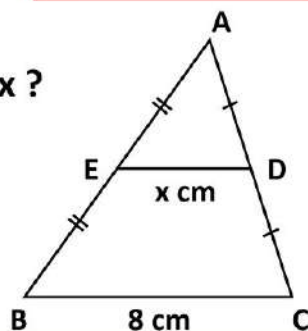
18 In the given figure:
What is the value of x ?

(a) 16

(c) 4

(b) 8

(d) 2



19 Sixth the number: $2^{12} \times 3^{12}$ is

☐ a 6^2

☐ b 6^4

☒ c 6^{11}

☐ d 6^{23}

20 Eighth of $2^{24} = \dots\dots\dots$

☐ a 2^{16}

☐ b 2^{23}

☒ c 2^{21}

☐ d 2^8

21 The S.S of the equation: $x^2 + 9 = 0$ in R is

☐ a $\{-9\}$

☐ b $\{-3, 3\}$

☐ c $\{-3\}$

☒ d $\emptyset$

22 $(\sqrt{5} - \sqrt{3})(\sqrt{5} + \sqrt{3})$ is

☒ a 2

☐ b 3

☐ c 8

☐ d 15

23 If $\Delta ABC \cong \Delta XYZ$ and $m(\angle X) + m(\angle Z) = 140^\circ$, $m(\angle B) = \dots\dots\dots$

☐ a 70°

☐ b 220°

☒ c 40°

☐ d 140°

24 $\{3\} \cap [3, 6] = \dots\dots\dots$

☒ a $\{3\}$

☐ b $\emptyset$

☐ c $]3, 6]$

☐ d $\{6\}$

25 $[-2, 1] \cap \{0, 1, 2\} = \dots\dots\dots$

☐ a $[0, 1]$

☐ b $[0, 1[$

☒ c $\{0, 1\}$

☐ d $\{-2, -1, 0, 1, 2\}$

26 If the expression $x^2 + ax + 64$ is a perfect square, then $a = \dots\dots\dots$

☐ a 16

☒ b ± 16

☐ c 8

☐ d ± 8

27 Which of the following represents the factorization of the polynomial $16x^2 - 24x^3$ by taking out GCF?

☐ a $8x(2x - 3x^2)$

☐ b $4x^2(4 - 6x)$

☒ c $8x^2(2 - 3x)$

☐ d $8(2x^2 - 3x^3)$



28 If ΔABC is right-angled at A and $AB = AC$, then $m(\angle B) = \dots\dots\dots$

- (a) 30° (b) 45° (c) 60° (d) 90°

29 The greatest common factor of the expression $12x^3y^4 + 8x^2y^3$

- (a) $2x^2y^3$ (b) $4x^2y^3$ (c) $4x^3y^4$ (d) $12x^3y^4$

30 A square has an area of $16x^4 + 64x^2 + 64 \text{ cm}^2$. What is the length of its side in terms of x?

- (a) $(4x + 8) \text{ cm}$ (b) $(8x + 4) \text{ cm}$ (c) $(4x^2 + 8) \text{ cm}$ (d) $(8x^2 + 4) \text{ cm}$

31 $\sqrt[3]{(-8)^2} = \dots\dots\dots$

- (a) -4 (b) -2 (c) 2 (d) 4

32 What is the value of $4^2 + 4^2 + 4^2 + 4^2$?

- (a) 4^2 (b) 4^3 (c) 4^8 (d) 4^{16}

33 If $2^{x-1} = 1$, what is the value of x?

- (a) 0 (b) -1 (c) 1 (d) -2

34 If $\Delta ABC \cong \Delta XYZ$ and $m(\angle A) + m(\angle B) = 130^\circ$, $m(\angle Z) = \dots\dots\dots$

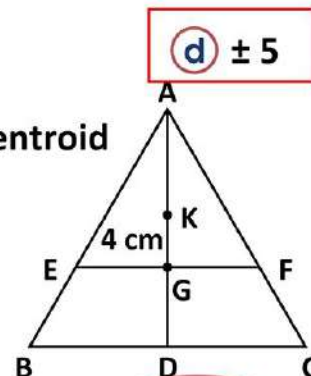
- (a) 50° (b) 65° (c) 130° (d) 180°

35 If $a^2 + b^2 = 15$, $2ab = 10$, Then $a + b = \dots\dots\dots$

- (a) 5 (b) -5 (c) 25 (d) ± 5

36 If G is the centroid of the triangle ABC, and K is the centroid of the triangle AEF, what is the length of GD ?

- (a) 2 cm (b) 4 cm (c) 6 cm (d) 8 cm



37 If $x + y = 10$, $a - b = 7$, Then the value of: $x(a - b) - y(b - a) = \dots\dots\dots$

(a) 3

(b) 17

(c) 51

(d) 70

38 If $x^2 - 11x + 28 = (x - a)(x - b)$, then the value of $a + b = \dots\dots\dots$

(a) -16

(b) -11

(c) 11

(d) 16

39 What is the center of the third interval of the intervals 6-, 10-, 14-, 18-, ?

(a) 12

(b) 14

(c) 16

(d) 18

40 If $a x^2 - b = (3x - 2)(3x + 2)$, what is the value of $a + b$?

(a) -13

(b) 13

(c) -5

(d) 5

41 How many sides does a regular polygon have if the measure of one of its exterior angles is 20° ?

(a) 12

(b) 14

(c) 16

(d) 18

42 In ΔABC : $(AB)^2 = (BC)^2 + (AC)^2 + 5$, then $m(\angle C) \dots\dots\dots 90^\circ$.

(a) >

(b) <

(c) =

(d) $\leq$

43 $x^2y - xy^2 = \dots\dots\dots$

(a) $xy(x - y)$

(b) $x^2y(1 - y)$

(c) $xy^2(x - 1)$

(d) $xy(y - x)$

44 The rectangle whose dimensions are 6 cm. and 8 cm, then its diagonal length equals cm.

(a) 7

(b) 17

(c) 15

(d) 10

45 If ABCD is a quadrilateral in which $AB = AD$ and $BC = DC$, then $\overleftrightarrow{AC}$ is $\overleftrightarrow{BD}$

(a) parallel to

(b) axis of symmetry

(c) congruent to

(d) equal to



46 ΔXYZ is right at Y, if $XZ = 25$ cm, $XY = 20$ cm, Then $YZ = \dots\dots\dots$ cm

☐ a 15

☐ b 20

☐ c 225

☐ d 400

47 The solution set of the equation: $x^3 - x = 0$ in R is $\dots\dots\dots$

☐ a $\{0\}$

☐ b $\{1\}$

☐ c $\{-1\}$

☐ d $\{0, -1, 1\}$

48 $x(a - b) + y(a - b) + a - b = a - b(\dots\dots\dots)$

☐ a $x - y$

☐ b $x + y$

☐ c $x + y - 1$

☐ d $x + y + 1$

49 If two triangle ABC and XYZ are congruent, then $\dots\dots\dots$

☐ a $BC = XZ$

☐ b $YX = CA$

☐ c $ZY = CB$

☐ d $AB = YZ$

50 How many diagonals does a convex heptagon have?

☐ a 7

☐ b 11

☐ c 13

☐ d 14

51 When completing the square for: $(x^2 + 9)$ add $\dots\dots\dots$

☐ a $\pm 3x$

☐ b $\pm 6x$

☐ c $\pm 9x$

☐ d $\pm 12x$

52 If $\overline{AB} \cong \overline{CD}$, Then $AB \div CD = \dots\dots\dots$

☐ a 0

☐ b 1

☐ c AB

☐ d 2

53 For the expression: $x^2 - 2x - k$ can be factorized, then $k \neq \dots\dots\dots$

☐ a 8

☐ b 3

☐ c 6

☐ d 15

54 In the thirty sixty triangle, the ratio between the length of the median drawn from the vertex of the right angle and the length of the side opposite to the angle of measure 30° is $\dots\dots\dots$

☐ a 2 : 1

☐ b 1 : 2

☐ c 1 : 1

☐ d 2 : 3



55 In ΔABC , $AB = AC$, $m(\angle B) = 6x^\circ$, $m(\angle A) = 3x^\circ$, then $x = \dots\dots\dots$

(a) 60°

(b) 30°

(c) 12°

(d) 90°

56 $(75)^2 + 75 \times 25 = \dots\dots\dots$

(a) 75

(b) 750

(c) 7500

(d) 75000

57 If $\Sigma f = 50$, $\Sigma (f \cdot x_m) = 800$, what is the arithmetic mean $\bar{x}$?

(a) 16

(b) 160

(c) 750

(d) 850

58 The nearest integer to $\sqrt[3]{25}$ is $\dots\dots\dots$

(a) 5

(b) 3

(c) 2

(d) 12.5

59 The irrational number located between 2 and 3 is $\dots\dots\dots$

(a) $\sqrt{7}$

(b) $\sqrt{10}$

(c) 2.5

(d) $\sqrt{3}$

60 If $(x - 3)$ is a factor of the expression: $x^2 - 4x + 3$, then the other factor is $\dots\dots\dots$

(a) $(x + 1)$

(b) $(x - 1)$

(c) $(x + 3)$

(d) $(x - 3)$

61 In the rhombus ABCD. the axis of symmetry of $\overline{AC}$ is $\dots\dots\dots$

(a) $\overleftrightarrow{BD}$

(b) $\overleftrightarrow{AB}$

(c) $\overleftrightarrow{AD}$

(d) $\overleftrightarrow{CD}$

62 If $(x + a)(y + b) = xy + 5x + 7y + 35$, then what is the value of ab ?

(a) 2

(b) 12

(c) 35

(d) 17

63 If the upper limit of an interval is 50 and its center is 45, what is the lower limit of this interval?

(a) 35

(b) 40

(c) 45

(d) 55



64 The value of $3^{11} + 3^{12} = \dots\dots\dots$

- (a) 4×3^{10} (b) 3×3^{22} (c) 4×3^{20} (d) 4×3^{11}

65 The solution set of the equation: $2x^2 - 9x + 9 = 0$ in R is $\dots\dots\dots$

- (a) $\{3\}$ (b) $\{2, 3\}$ (c) $\{\frac{3}{2}, 3\}$ (d) $\{-\frac{3}{2}, -3\}$

66 If $(x - 2)(x + 5) = 0$, which of the following is correct?

- (a) $x = 2$ or $x = 5$ (b) $x = -2$ or $x = 5$ (c) $x = -2$ or $x = -5$ (d) $x = 2$ or $x = -5$

67 What is the measure of the interior angle of a regular polygon with 18 sides?

- (a) 135° (b) 144° (c) 150° (d) 160°

68 If $\Delta ABC \cong \Delta LMN$, $m(\angle A) = 50^\circ$, $m(\angle M) = 60^\circ$, $m(\angle C) = \dots\dots\dots$

- (a) 60° (b) 50° (c) 70° (d) 10°

69 If $a + b = 5$, $a^2 - b^2 = 15$, then what is the value of $a - b$?

- (a) 20 (b) 3 (c) 75 (d) 10

70 ABC is a triangle in which $m(\angle A) = m(\angle B) + m(\angle C)$, then $m(\angle A) = \dots\dots\dots$

- (a) 180° (b) 90° (c) 108° (d) 60°

71 If X lies on the axis of symmetry of AB, then $XA \dots\dots\dots XB$

- (a) $=$ (b) $>$ (c) $\cong$ (d) $<$

72 What is the number of sides of a polygon whose sum of measures of its interior angles is 1980° ?

- (a) 10 (b) 11 (c) 12 (d) 13



- 73 If $(x + b)(x + 3) = x^2 + ax + 15$, then what is the value of $a + b$?
- (a) 3 (b) 12 (c) 13 (d) 5
- 74 How many sides does a convex polygon have if the sum of the measures of its interior angles is 2340° ?
- (a) 12 (b) 13 (c) 14 (d) 15
- 75 Completing the perfect square for the expression: $x^2 + 9$ we add to it
- (a) $\pm 12x$ (b) $\pm 6x$ (c) 12 (d) 6
- 76 $x^{m-1} \times \dots = 1, x \neq 0$
- (a) x^{-m-1} (b) x^{m+1} (c) x^{m-1} (d) x^{-m+1}
- 77 If $A \in L$, where L is axis of symmetry of BC , then $\overline{AB} \dots \overline{AC}$
- (a) = (b) > (c) $\cong$ (d) <
- 78 If $\Sigma f = 100$, $\Sigma (f \cdot x_m) = 3,500$, what is the arithmetic mean $\bar{x}$?
- (a) 35 (b) 350 (c) 3,500 (d) 3.5
- 79 If the lower limit of an interval is 15 and its center is 17.5, what is the length of the interval?
- (a) 5 (b) 10 (c) 20 (d) 25
- 80 If $x < \sqrt[3]{36} < x + 1, x \in \mathbb{Z}$, then $x = \dots$
- (a) 2 (b) 3 (c) 4 (d) 6
- 81 In ΔXYZ , $XY = XZ$, XE is a median, If $m(\angle YXE) = 30^\circ$, Then $m(\angle YXZ) = \dots$
- (a) 15° (b) 30° (c) 60° (d) 90°



82 If $\overline{AB} \cong \overline{CD}$, Then $AB - CD = \dots\dots\dots$

☒ a 0

☐ b 1

☐ c AB

☐ d 2

83 If $x^2 + b = 12$, $x + a = 6$, What the numerical value of the expression $x^3 + ax^2 + bx + ab$?

☐ a 6

☐ b 12

☐ c 2

☒ d 72

84 If $x \in [-3, \infty[$, then $\dots\dots\dots$

☐ a $x < -3$

☐ b $x \leq -3$

☐ c $x > -3$

☒ d $x \geq -3$

85 An isosceles triangle, the measure of one of its angles is 60° , then the number of its axis of symmetry is $\dots\dots\dots$

☐ a 0

☐ b 1

☐ c 2

☒ d 3

86 $2^{2024} = 2^{2023} + \dots\dots\dots$

☐ a 2

☐ b 2024

☐ c 2^{2024}

☒ d 2^{2023}

87 If $\frac{x}{3} = \frac{9}{x^2}$, then $x = \dots\dots\dots$

☐ a 1

☒ b 3

☐ c 9

☐ d 27

88 If $x^2 - a = (x - 5)(x + 5)$, Then $a = \dots\dots\dots$

☐ a 5

☐ b -25

☒ c 25

☐ d 10

89 In ΔABC , if $\angle A$ complements $\angle B$, then $(AB)^2 \dots\dots\dots (BC)^2 + (AC)^2$

☐ a $>$

☐ b $<$

☒ c $=$

☐ d $\leq$

90 How many sides does a regular polygon have if the measure of one of its interior angles is 144° ?

☒ a 10

☐ b 11

☐ c 12

☐ d 14



91 If $(x - 3)$ is a factor of the expression: $x^2 - 4x + 3$, then the other factor is

- (a) $(x + 1)$ (b) $(x - 1)$ (c) $(x + 3)$ (d) $(x - 3)$

92 The number of medians of the right-angled triangle is

- (a) zero (b) 1 (c) 2 (d) 3

93 If $x + \sqrt{28} = \sqrt{7}$, what is the value of x ?

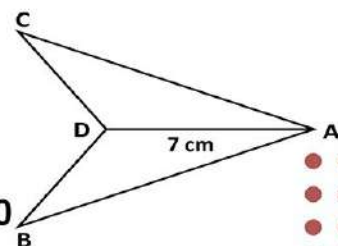
- (a) $\sqrt{21}$ (b) $\sqrt{7}$ (c) $-\sqrt{21}$ (d) $-\sqrt{7}$

94 If $x^3 + y^3 = 24$, $x + y = 6$, then $x^2 - xy + y^2 = \dots\dots\dots$

- (a) 4 (b) 12 (c) 18 (d) 30

95 If $\triangle ABD \cong \triangle ACD$, $AD = 7$ cm, The perimeter of the figure $ABDC = 20$ cm, Then the perimeter of $\triangle ABD = \dots\dots\dots$ cm

- (a) 27 (b) 17 (c) 26 (d) 10



96 If $x^3 + 27 = (x + 3)(x^2 + k + 9)$, then $k = \dots\dots\dots$

- (a) $-6x$ (b) $-3x$ (c) $3x$ (d) $6x$

97 If the expression : $x^2 + bx - 10$ can be factorized, then b may be equal to

- (a) 3 (b) 2 (c) 1 (d) -1

98 If $\triangle ABC$ has three axes of symmetry and AD is a median, Then $AC = \dots\dots\dots$ BD .

- (a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{3}$ (d) $\frac{1}{4}$

99 If the measure of one of the base angles of an isosceles triangle is 40° then the measure of its vertex angle equals

- (a) 100° (b) 80° (c) 50° (d) 40°



- 100 If the upper limit of an interval is 18 and its center is 15.5, what is the lower limit of this interval?
- (a) 12 (b) 12.5 (c) 13 (d) 13.5
- 101 $\sqrt{25 + 144} = 5 + \dots\dots\dots$
- (a) 12 (b) 13 (c) 8 (d) 6
- 102 The two base angles of the isosceles right-angled triangle are
- (a) supplementary (b) 180° (c) complementary (d) different
- 103 $] -1, 3] \cup \{0, -1\} = \dots\dots\dots$
- (a) $]0, 3]$ (b) $] -1, 3[$ (c) $[-1, 3]$ (d) $[0, 3]$
- 104 The axis of symmetry of a line segment is the bisector of this line segment
- (a) parallel (b) inclined (c) skew (d) perpendicular
- 105 If $(X + 3)$ is one factor of the expression : $x^2 + x - 6$, then the other factor is
- (a) $x + 3$ (b) $x - 4$ (c) $x + 1$ (d) $x - 2$
- 106 The irrational number in the following numbers is
- (a) $\sqrt{\frac{25}{9}}$ (b) $\sqrt[3]{\frac{1}{27}}$ (c) $\sqrt{3}$ (d) $\sqrt[3]{125}$
- 107 The factorization of $x^3 + 2x^2 - 4x - 8$ is
- (a) $(x^2 - 4)(x - 2)$ (b) $(x - 2)(x + 2)^2$ (c) $(x + 2)(x - 2)$ (d) $(x^2 + 4)(x - 2)$
- 108 If M is the point of intercection of the medians of ΔABC , AD is a median of length 6 cm, then $AM = \dots\dots\dots$ cm
- (a) 1 (b) 2 (c) 4 (d) 3



109 If $\Delta ABC \cong \Delta LMN$, then, $m(\angle B) = m(\angle \dots\dots\dots)$

☒ a LMN

☐ b MNL

☐ c LNM

☐ d NLM

110 If $x + y = 3$, $x^2 - xy + y^2 = 12$, then $x^3 + y^3 = \dots\dots\dots$

☐ a 4

☒ b 36

☐ c 9

☐ d 24

111 In ΔABC , $AB = AC$, $m(\angle B) = x + 30^\circ$, $m(\angle C) = 2x + 5^\circ$, the $x = \dots\dots\dots$

☒ a 25°

☐ b 20°

☐ c 35°

☐ d 65°

112 If M is the point of intersection of the medians of ΔABC , D is a midpoint of BC, then $AD = \dots\dots\dots$

☐ a 2 AM

☐ b $\frac{2}{3}MD$

☒ c $\frac{3}{2}AM$

☐ d 4 MD

113 The set of non-negative real numbers = $\dots\dots\dots$

☐ a $]0, \infty[$

☐ b $]-\infty, 0[$

☒ c $[0, \infty[$

☐ d $]-\infty, 0]$

114 The cube whose volume is 24 cm^3 , its edge length = $\dots\dots\dots \text{ cm}$

☐ a 12

☐ b 8

☒ c $\sqrt[3]{24}$

☐ d $\sqrt{24}$

115 If $x - y = 5$, $x^2 + xy + y^2 = 7$, then $x^3 - y^3 = \dots\dots\dots$

☐ a 2

☐ b 7

☐ c 12

☒ d 35

116 $Q \cap Q^c = \dots\dots\dots$

☐ a R

☒ b $\emptyset$

☐ c Q

☐ d Q^c

117 ABC is a triangle in which $AB = AC$, $m(\angle A) = 60^\circ$ and the perimeter of this triangle equals 18 cm, then $BC = \dots\dots\dots \text{ cm}$

☐ a 10

☐ b 12

☒ c 6

☐ d 8



118 $R_+ \cup R_- = \dots\dots\dots$

(a) R

(b) $\emptyset$

(c) R_+

(d) R^*

119 The multiplicative inverse of $\frac{\sqrt{2}}{6}$ is $\dots\dots\dots$

(a) $\frac{\sqrt{2}}{2}$

(b) $3\sqrt{2}$

(c) $\sqrt{6}$

(d) $\sqrt{3}$

120 If $\frac{x}{3\sqrt{2}} = \frac{y}{2\sqrt{5}} = 1$, then the value of $x^2 + y^2 = \dots\dots\dots$

(a) 36

(b) 38

(c) 42

(d) 45

121 The sum of lengths of any two sides of a triangle the length of the third side

(a) $<$

(b) $=$

(c) $>$

(d) $\leq$

122 What is the center of the second interval of the intervals: 5– , 15– , 25– , 35– ?

(a) 5

(b) 10

(c) 15

(d) 20

123 $\sqrt[3]{-64} + \sqrt{16} = \dots\dots\dots$

(a) zero

(b) 8

(c) -8

(d) ± 8

124 $[3, 7] -]3, 7[= \dots\dots\dots$

(a) $]3, 7[$

(b) $[3, 7]$

(c) $\{3, 7\}$

(d) $\emptyset$

125 The irrational number located between 4 and 5 is $\dots\dots\dots$

(a) $\sqrt{8}$

(b) $4\sqrt{2}$

(c) $3\sqrt{2}$

(d) $\sqrt{10}$

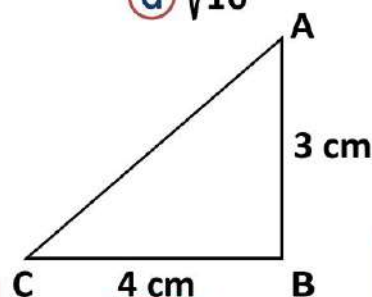
126 In the opposite figure:
what is the area of the square drawn on the side $\overline{AC}$?

(a) 14 cm^2

(b) 5 cm^2

(c) 7 cm^2

(d) 25 cm^2



127 If the arithmetic mean ($\bar{x}$) of a frequency table is 24.5 and $\Sigma (f \cdot x_m) = 980$, what is the value of Σf ?

(a) 40

(b) 50

(c) 60

(d) 70

128 The S.S of the equation: $x^3 - x^2 = 0$ in R is

(a) {0}

(b) {0, 1}

(c) {1}

(d) $\emptyset$

129 Which of the following numbers could be the lengths of sides of an obtuse-angled triangle?

(a) 5, 5, 5

(b) 17, 8, 15

(c) 3, 5, 6

(d) 4, 7, 7

130 The point of concurrence of the medians of the triangle divides each of them in the ratio of..... from the vertex.

(a) 2 : 1

(b) 1 : 2

(c) 1 : 3

(d) 3 : 1

اللهم اجعل هذا العمل خالصا لوجهك الكريم
واكتب له القبول والنفع يا كريم يا وهّاب.



كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



خطوة 1



خطوة 2
اختيار اسم
الطابعة
بتاعتك

خطوة 3
كتابة الصفحات
المراد طباعتها
نكتب رقم 4 ثم
نكتب الشرطة
دي - ثم نكتب 9

خطوة 4
اختيار نوع الورق



خطوة 5
اختيار A4



خطوة 6